bibliotechnics 00232246 patents pending

0232246

BIO-MEDICAL LIBRARY
MONASH UNIVERSITY

H

RARE BOOK

ORDER XX. GUTTIFERÆ.

Flowers regular, usually diœcious or polygamous. Sepals 2 to 6, or rarely more, much imbricate or in decussate pairs. Petals 2 to 6, rarely more, imbricate or contorted. Male fl.: Stamens usually indefinite, free or variously united; anthers adnate, innate, or sometimes immersed in the mass of filaments. Ovary none, or rudimentary, or more or less developed. Female or hermaphrodite fl.: Staminodia or stamens usually fewer and more free than in the males. Ovary 2- or more-celled, rarely 1-celled, with 1 or more ovules in each cell, erect from the base or attached to the central angle. Stigmas as many as cells, radiating or united into one, sessile or raised on a simple or rarely branched style. Fruit usually fleshy or coriaceous, indehiscent or opening septicidally in as many valves as cells. Seeds thick, often arillate, without albumen. Embryo filling the seed, often apparently homogeneous, consisting either of a fleshy radicle, with minute or without any cotyledons, or of thick fleshy cotyledons, with a very short, usually inferior radicle.—Trees or shrubs, exuding a yellow, resinous juice. Leaves opposite or rarely verticillate, thickly coriaceous and entire. Flowers terminal or axillary, solitary, clustered or in trichotomous cymes or panicles.

A tropical Order both in the New and in the Old World, represented in Australia by a single species, apparently identical with a common Asiatic one.

1. CALOPHYLLUM, Linn.

Flowers polygamous. Sepals and petals together, 4 to 12, imbricate in 2 or 3 series. Stamens indefinite, free or nearly so; filaments shortly filiform; anthers ovate or oblong, 2-celled, opening longitudinally. Ovary 1-celled, with a single erect ovule; style elongated, with a peltate stigma. Drupe indehiscent, with a crustaceous endocarp. Seed erect, ovoid or globular, the testa thin, or thick and hard, or spongy and then often adhering to the endocarp.—Trees, with the leaves marked with numerous closely parallel, transverse veins.

The genus is tropical, chiefly Asiatic, with a few American species.

1. **C. inophyllum,** *Linn.; W. and Arn. Prod.* i. 103. A glabrous tree. Leaves petiolate, broadly oblong or obovate-oblong, rounded at the apex, about 6 in. long in well-grown specimens. Racemes in the upper axils much shorter than the leaves, loose. Flowers large for the genus, on long pedicels, the buds nearly globular. Sepals 4, the 2 inner ones more petal-like than the outer ones. Petals 4, longer than the calyx. Stamens more or less united at the base into 4 (or more?) bundles. Fruit globular, the size of a plum.—Wight, Ic. t. 77; Planch. and Tri. in Ann. Sc. Nat. Par. ser. 4, xv. 282.

Queensland. Percy Islands, *A. Cunningham.* From the Burdekin Expedition, *Herb. Mueller.* The latter specimens consist only of some young seedlings in leaf only, and 2 fruits. These are about 1½ in. diameter, the thick, hard, almost corky testa of the seed adhering to the endocarp. Embryo nearly globular, apparently homogeneous, slightly conical at the end furthest from the hilum. That this is the radicular end is shown by the remains of the seed still attached to one of the seedling plants. Whether the position of the radicle turned away from the hilum is accidental in that one fruit, or general in the species or variety, cannot be determined without further fruiting specimens. Cunningham's are in flower only.

ORDER XXI. MALVACEÆ.

Flowers regular, usually hermaphrodite or rarely partially diœcious or polygamous. Sepals 5, rarely 3 or 4, more or less united in a lobed or entire calyx, the lobes valvate or very rarely slightly imbricate. Petals 5, hypogynous, usually adnate at the base to the staminal column, contorted in the bud, rarely wanting. Stamens indefinite, hypogynous, more or less united at the base, the column divided into filaments at the top or bearing the filaments outside, below or up to the top. Anthers from globose to linear, often reniform or variously waved, 1-celled or spuriously divided into two cells by a thin and incomplete longitudinal septum. Torus small or conical and protruding into the centre of the ovary, not expanded into a disk. Ovary 2- or more-celled (very rarely reduced to a single carpel), entire or lobed, the carpels verticillate round the axis or (in genera not Australian) irregularly clustered. Style simple at the base, divided at the top into as many or twice as many branches or stigmas as there are cells, or rarely entire and clavate. Ovules 1 or more in each cell, ascending or horizontal, with a ventral or superior raphe, or reversed and pendulous, with the raphe dorsal. Fruit dry or rarely baccate, the carpels separating and indehiscent or 2-valved, or united in a loculicidally dehiscent capsule. Seeds with the testa usually crustaceous, without or with very little albumen; cotyledons usually folded and often enclosing the curved or rarely straight radicle.—Herbs, shrubs, or soft-wooded trees, the hairs usually stellate. Leaves alternate, mostly toothed, lobed or divided, with palmate nerves or divisions, rarely digitately compound. Stipules free, usually subulate or small and deciduous, rarely leafy. Peduncles usually 1-flowered and articulate above the middle, rarely bearing a bract at the joint or several-flowered, all axillary or the upper ones forming a terminal raceme or panicle. Bracteoles either none or 3 or more, free or united, forming an involucre close to or adherent to the calyx. Flowers often large, usually purple, red, or yellow.

A large Order generally dispersed over all except the coldest regions of the globe, distinguished from *Sterculiaceæ* and *Tiliaceæ* by the 1-celled anthers, and from all others by the valvate calyx and monadelphous hypogynous stamens. Of the 15 following genera, 11 are more or less tropical, 6 being common to the warmer regions of both the New and the Old World; 3, *Malvastrum*, *Pavonia*, and *Fugosia*, chiefly American, or American and African, but not Asiatic; and 2, *Thespesia* and *Adansonia*, African and Asiatic. *Lavatera* is a Mediterranean form, represented by one species in extratropical Australia, the remaining three are endemic or nearly so, *Plagianthus* being also represented in New Zealand and *Laguneria* in Norfolk Island.

TRIBE I. **Malveæ.** *Staminal column bearing filaments to the summit. Style-branches the same number as ovary-cells. Mature carpels separating more or less from the axis (imperfectly so in* Howittia *and some* Abutila).

Ovules solitary in each cell, ascending with a ventral raphe.
Style-branches lined with decurrent stigmas.
Bracteoles 3 to 6, united at the base . . . . 1. LAVATERA.
Bracteoles 3, distinct . . . . MALVA (p. 186).
Stigmas terminal, capitate or truncate. Bracteoles 1 to 3 distinct, or none . . . . 2. MALVASTRUM.
Ovules solitary in each cell, pendulous or horizontal with a dorsal raphe.
Bracteoles none.
Styles with decurrent stigmas. Flowers more or less diœcious . . . 3. PLAGIANTHUS.

Stigmas terminal, capitate, or truncate . . . . 4. SIDA.
Ovules 2 or more in each cell. Bracteoles none. Stigmas terminal.
Capsule 2- or 3-celled, loculicidal, the carpels scarcely separating. . 5. HOWITTIA.
Capsule 5- to 20-celled, separating or cohering at least till the seed has shed . . . . 6. ABUTILON.

TRIBE II. **Ureneæ.**—*Staminal column truncate or 5-toothed at the summit, bearing the anthers or filaments on the outside. Style-branches twice the number of carpels. Carpels 1-seeded.*

Bracteoles 5, united at the base. Carpels muricate or glochidiate . 7. URENA.
Bracteoles 5 or more, usually free. Carpels reticulate or smooth . 8. PAVONIA.

TRIBE III. **Hibisceæ.**—*Staminal column truncate or 5-toothed at the summit, bearing the anthers or filaments on the outside, or rarely at the summit also. Style-branches or stigmas the same number as ovary-cells. Carpels united in a several-celled capsule, loculicidal or indehiscent.*

Style branched at the top or with radiating stigmas. Ovary 5-celled.
Bracteoles 5 or more, free or united (sometimes very deciduous).
Hairs or tomentum stellate . . . . 9. HIBISCUS.
Bracteoles 3 (sometimes very deciduous). Tomentum of scurfy scales 10. LAGUNARIA.
Style undivided, with decurrent stigmas.
Bracteoles 3 to 5, narrow, not cordate, sometimes very small.
Ovary 3, 4- or rarely 5-celled. Capsule coriaceous, loculicidal . 11. FUGOSIA.
Ovary 5-celled. Capsule woody, sometimes indehiscent . . . . 12. THESPESIA.
Bracteoles 3, broad, cordate . . . . 13. GOSSYPIUM.

TRIBE IV. **Bombaceæ.**—*Staminal column, in the Australian genera divided at the top into numerous filaments, in other genera the filaments or anthers variously arranged. Style undivided, or with very short stigmatic lobes as many as ovary-cells. Carpels united in a loculicidal or indehiscent capsule.—A large tropical tribe, difficult to distinguish from arborescent Hibisceæ by a general character, although each genus has peculiarities not found among Hibisceæ.*

Calyx entire in the bud, afterwards 3- to 5-cleft, large, woody, filled with mealy pulp. Leaves digitate . . . . 14. ADANSONIA.
Calyx truncate in the bud, afterwards 3- to 5-cleft. Capsule 5-valved, densely woolly inside. Leaves digitate . . . . 15. BOMBAX.

1. LAVATERA, Linn.

Bracteoles united into a 3- to 6-cleft involucre. Calyx 5-lobed. Staminal column divided to the top into several filaments. Ovary-cells indefinite, 1-ovulate. Style-branches of the same number as cells, filiform, stigmatic along the inner side. Fruit-carpels in a depressed circle, indehiscent, verticillate round the torus or axis, which is usually prominent beyond them, either conical or variously dilated above them. Seed ascending.—Herbs, shrubs, or trees, tomentose or hirsute. Leaves angular or lobed. Flowers pedunculate, axillary or in a terminal raceme.

The greater number of species are from Western Europe or the Mediterranean region, one extending into central Asia; there are also two from the Canary Islands, besides the subjoined Australian species, which is endemic, but nearly allied to one of the European ones.

1. **L. plebeia,** *Sims, in Bot. Mag. t.* 2269. A coarse, erect herb, becoming woody at the base and attaining the height of 5 to 10 ft., more or less scabrous or softly tomentose with minute stellate hairs. Leaves on long petioles, orbicular-cordate, 5- or 7-lobed, the lower ones sometimes attaining

6 in. diameter, the upper ones 1 to 2 in.; the lobes short, broad, very obtuse and crenate, the central one of the upper leaves often longer than the others. Stipules narrow-lanceolate or triangular. Pedicels axillary, usually clustered, rarely solitary, sometimes very short and rarely exceeding 1 in. Involucre deeply 3-lobed, the lobes ovate, obtuse, shorter than the 5-lobed calyx. Petals pale rose-colour or whitish, 1 to 1½ in. long. Carpels of the fruit 6 to 15, in a close ring, with flat backs and sharp angles, the receptacle protruding from the central depression as a small conical point.—DC. Prod. i. 439; Hook. f. Fl. Tasm. i. 47; F. Muell. Pl. Vict. i. 166; *Malva Behriana*, Schlecht. Linnæa, xx. 633; *Lavatera Behriana*, Schlecht. l. c. xxiv. 699, and xxvii. 527; *Malva Preissiana*, Miq. in Pl. Preiss. i. 238.

N. S. Wales. In the interior, W. of Peel's range, *A. Cunningham;* Darling and Lachlan rivers, *Victorian Expedition;* common towards the Barrier Range, *W. Wills;* Paramatta, *Herb. Mueller.*

Victoria. Along watercourses and in occasionally inundated depressions, scattered over many parts of the colony, more frequent in the N.W. portion, *F. Mueller.*

Tasmania. Near the sea at Woolnorth, and in the islands of Bass's Straits, *Gunn, J. D. Hooker.*

S. Australia. St. Vincent's Gulf, Spencer's Gulf, Lake Torrens, and the country on the eastern side of the great Australian Bight, *F. Mueller.*

W. Australia, *Drummond, n.* 102; King George's Sound, *R. Brown, A. Cunningham.*

The species is allied to the European *L. arborea,* Linn., which is however at once known by its large spreading involucres.

L. hispida, Desf., DC. Prod. i. 438, a hirsute species with nearly sessile flowers forming a long terminal raceme or interrupted spike, and with broad hirsute involucres, a native of the Mediterranean region, appears to be naturalized in some islands of Bass's Straits (*F. Mueller*).

The genus *Malva,* now restricted to the species from the temperate regions of Europe and Asia, is only distinguished from *Lavatera* by the 3 bracteoles being quite free, and the receptacle never expanded above the carpels. Four common European species have become naturalized as weeds in some of the colonies, viz. 1, *M. rotundifolia*, Linn., DC. Prod. i. 432, with decumbent or prostrate stems, small flowers, petals not twice the length of the calyx, and carpels usually about 15, rounded on the back so as to form a disk-shaped fruit slightly furrowed on the margin between the carpels; 2, *M. parviflora*, Linn., DC. l. c. 433, like *M. rotundifolia* in habit and small flowers, but the carpels flat on the back with angular edges, so that the fruit has rather projecting ribs than furrows between the carpels; 3, *M. verticillata*, Linn., DC. l. c. 433, with erect stems, small flowers in close clusters, and the carpels of *M. parviflora;* and 4, *M. sylvestris*, Linn., DC. l. c. 432, with ascending or erect stems, large flowers, the petals 3 or 4 times as long as the calyx, the carpels angular as in *M. parviflora.*

2. MALVASTRUM, A. Gray.

Bracteoles either none or 1 to 3, small and distinct. Calyx 5-lobed. Staminal column divided to the top into several filaments. Ovary-cells 5 or more, 1-ovulate. Style-branches of the same number as the cells, filiform or club-shaped, with terminal small or capitate stigmas. Fruit-carpels seceding from the short axis, indehiscent or slightly 2-valved, occasionally produced at the top into erect connivent beaks. Seed ascending, reniform.—Herbs or undershrubs. Leaves entire or divided. Flowers red or yellow, shortly pedunculate or sessile, axillary or in terminal spikes.

A considerable genus, chiefly American, with a few South African species. The two Australian species are both American, but now scattered over some of the warmer regions of the

Old World. The genus, formerly confounded with *Malva* and *Sida*, is readily distinguished from the former by the styles, from the latter by the ascending ovules and seeds.

Tomentum stellate. Flowers mostly in a short terminal spike . . 1. *M. spicatum.*
Hairs appressed, parallel. Flowers mostly axillary. Calyx broad . 2. *M. tricuspidatum.*

1. **M. spicatum,** *A. Gray, Pl. Fendl.* 22, *and Bot. Amer. Expl. Exped.* i. 147. An erect branching herb of 1 to 2 ft., becoming almost woody at the base, scabrous or softly tomentose with stellate hairs. Leaves petiolate, ovate or ovate-lanceolate, acute or obtuse, 1 to 2 in. long, irregularly serrate or crenate, very rarely obscurely 3-lobed. Flowers rather small, yellow, sessile in a dense terminal spike, rarely exceeding 1 to 1½ in. in length, and often leafy at the base. Bracts narrow, shorter than the calyx, usually 2-lobed. Bracteoles 3, filiform, closely appressed to the calyx. Calyx softly pubescent, the lobes acuminate, and often bordered by long hairs. Petals about 4 to 5 lines long. Carpels 8 to 12, not close-pressed, angular on the edges, pubescent on the top, without points.—*Malva spicata*, Linn.; Cav. Diss. t. 20, f. 4; DC. Prod. i. 430; *M. ovata*, Cav. Diss. 81, t. 20, f. 2; *M. timoriensis*, DC. Prod. i. 430; *M. brachystachya*, F. Muell. in Linnaea, xxv. 378.

N. Australia. Victoria river and Gulf of Carpentaria, *F. Mueller.*
Queensland. Broad Sound and Keppel Bay, *R. Brown;* Brisbane river, *Fraser;* subtropical interior, *Mitchell;* Moreton Bay and Gilbert river, *F. Mueller.*
N. S. Wales. Clarence river, *Beckler;* New England, *C. Stuart;* Darling river and other parts of the W. interior, *Victorian Expedition, Dallachy*, etc.
S. Australia. Flinders range, *F. Mueller.*

The species is common in tropical America, and has been found also in the Cape de Verd Islands and in Timor.

2. **M. tricuspidatum,** *A. Gray, Pl. Wright, and Bot. Amer. Expl. Exped.* i. 148. An erect branching herb, 2 to 3 ft. high, hard and almost woody at the base, although sometimes annual, the branches sprinkled or covered with closely appressed hairs. Leaves on rather long petioles, from broadly ovate to lanceolate, 1 to 2 in. long, irregularly toothed, hairy. Flowers yellow, almost sessile in the axils of the leaves, or clustered towards the ends of the branches. Calyx broadly 5-lobed, with 3 small, narrow, external bracts. Carpels 8 to 12 or even more, closely packed in a depressed ring, each one reniform, with 3 minute unequal points on the upper edge, 1 at the inner angle, 2 dorsal.—*Malva tricuspidata*, Ait.; DC. Prod. i. 430; *Sida carpinoides*, DC. Prod. i. 460.

N. S. Wales. Clarence river, *Beckler.* This species, probably of American origin, is much more widely scattered over the warmer regions of the Old World than the *M. spicatum.*

3. PLAGIANTHUS, Forst.

(Asterotrichon *and* Blepharanthemum, *Klotzsch;* Lawrencia, *Hook.;* Halothamnus, *F. Muell.*)

Bracteoles none or distant from the calyx. Calyx 5-toothed or 5-lobed. Staminal column divided at the top into several filaments. Ovary-cells 2 to 5, rarely 1 or indefinite, 1-ovulate. Style-branches as many as cells, filiform or club-shaped, stigmatic along the inner side, either the whole length or near the top. Fruit-carpels 1, 2, or more, seceding from the axis, indehiscent or irregularly breaking up. Seed pendulous, with a dorsal raphe.—Shrubs or rarely herbs. Leaves entire or rarely lobed. Flowers usually small and white, more or less completely diœcious, axillary or terminal, usually clustered, rarely solitary or in short panicles.

The genus is confined to Australia and New Zealand, the several species being in each case endemic. It was formerly referred to *Sterculiaceæ*, from a mistaken view of the anthers. It is however nearly allied to *Sida*, with which F. Mueller proposes to unite the greater number of species, but the habit is different, the flowers, although generally provided both with stamens and pistils, are nevertheless almost constantly diœcious by abortion, which has not been observed in true *Sidas*, and the character derived from the style is one of the most constant in *Malvaceæ*.

SECT. 1. **Plagianthus.** *Calyx campanulate, the angles not prominent. Shrubs often tall. Leaves herbaceous, rugose, serrate or crenate, glabrous or stellate-hairy.*

Carpels 2 or 3 (1 only usually ripening) . . . . 1. *P. sidoides.*
Carpels usually 5 . . . . 2. *P. pulchellus.*

SECT. 2. **Lawrencia** (*Wrenciala*, A. Gr.).—*Calyx with* 5 *prominent angles. Herbs or tortuous shrubs. Leaves thick or small, entire or toothed at the top, nearly glabrous or scurfy.*

Flowers in dense terminal spikes. Erect herb, glabrous or slightly stellate-pubescent . . . . 3. *P. spicatus.*
Flowers axillary, solitary or clustered, not spicate. Herbs either glabrous or slightly stellate-pubescent.
Leaves cuneate-oblong. Flowers all sessile . . . . 4. *P. glomeratus.*
Leaves small, orbicular or obovate, on long petioles. Male flowers pedicellate . . . . 5. *P. diffusus.*
Tortuous shrubs, the herbaceous parts covered with scurfy scales.
Stem-leaves petiolate, often above 1 in. long . . . . 6. *P. squamatus.*
Stem-leaves sessile or nearly so, rarely exceeding ½ in. and mostly not ¼ in. . . . . 7. *P. microphyllus.*

1. **P. sidoides,** *Hook. Bot. Mag. t.* 3396. A shrub of several feet or sometimes a small tree, the young branches, under side of the leaves, and inflorescence more or less covered with a whitish or brown stellate tomentum, sometimes very dense and floccose. Leaves from ovate-lanceolate to lanceolate, obtusely serrate, 2 to 3 or rarely 4 in. long, rounded at the base, on petioles of 3 to 6 lines, glabrous on the upper side when full grown, with impressed veins. Flowers small, in short axillary racemes, the males with a broad campanulate calyx about 2 lines long; stamens about 15, the tube obscurely divided at the top into 5 clusters; pistil small and barren, although the ovary is 2-celled, with 1 pendulous ovule in each. In the females the calyx is almost tubular, the petals scarcely longer and persistent, the anthers small and barren, the pistil fully developed, the ovary 2-celled, the style-branches hairy at the base, much dilated from the middle upwards. Fruit-carpels usually 1 only, apparently indehiscent, enclosed in the membranous calyx; when both ripen they appear to separate.—Hook. f. Fl. Tasm. i. 49; *Sida discolor*, Hook. Journ. Bot. i. 250; *Asterotrichon sidoides*, Klotzsch in Link, Kl. et Otto. Ic. Pl. Rar. 19, t. 8; *Plagianthus Lampenii*, Lindl. Bot. Reg. 1838, Misc. 22.

Tasmania. Common in ravines, etc., in the southern part of the island, *R. Brown*, *J. D. Hooker*, and others.

The bark, full of strong fibre, is used in Tasmania as cordage.

2. **P. pulchellus,** *A. Gray, Bot. Amer. Expl. Exped.* i. 181. A tall shrub or small tree, either quite glabrous or the young branches and under side of the leaves slightly scabrous with scattered stellate hairs. Leaves on rather long petioles, from deeply cordate-ovate to lanceolate, often acuminate, 2 to 3 in. or rarely longer, coarsely crenate, mostly membranous, glabrous above. Flowers small, clustered along the rhachis of axillary racemes, longer or shorter than the petioles. Males pedicellate, with a broadly campanulate glabrous calyx of scarcely 1½ lines. Petals twice as long. Stamens near 30. Pistil small and barren, although bearing ovules. Female flowers sessile, with a small ovoid or almost globular calyx. Petals small and persistent. Anthers small and barren. Ovary 5-celled. Style-branches much thickened and stigmatic from about the middle. Fruit much longer than the calyx, slightly tomentose, somewhat depressed, deeply divided into 5 distinct cocci, which separate from the 5-angled axis and at length open in 2 short valves.—Hook. f. Fl. Tasm. i. 49; *Sida pulchella*, Bonpl. Jard. Malm. t. 2; DC. Prod. i. 468 (character incorrect); F. Muell. Pl. Vict. i. 161; *Abutilon pulchellum*, G. Don, Gen. Syst. i. 501; *Blepharanthemum*, Klotzsch, in Link, Kl. and Ott. Ic. Pl. Rar. i. 20.

N. S. Wales. Hawkesbury river, *R. Brown.* Cox's and Macquarie rivers, *A. Cunningham;* Illawara and Argyle county, *Backhouse.*

Victoria. Yarra river, *F. Mueller;* Fitzroy river, *Robertson.*

Tasmania. Port Dalrymple, *R. Brown;* abundant near Launceston and on the North Esk river, *J. D. Hooker.*

Var. *tomentosus*, Hook. f. Fl. Tasm. i. 49. More tomentose, especially the under side of the leaves and calyces. Styles elongated and slender. Cocci very tomentose.—*Sida pulchella*, Bot. Mag. t. 2753; *S. tasmanica*, Hook. f. in Hook. Journ. Bot. ii. 412; *Plagianthus tasmanicus*, A. Gray, Bot. Amer. Expl. Exped. i. 181. Tambo and Buchan rivers in Victoria, *F. Mueller;* common in Tasmania, *Gunn.*

3. **P. spicatus,** *Benth. in Journ. Linn. Soc.* vi. 103. A tall, erect, somewhat fleshy herb, drying of a yellowish colour, and glabrous or nearly so, with a thick, hard, almost woody base, and but little branched, attaining sometimes 5 ft. in height, but sometimes only 1 or 2 ft. Leaves on long petioles, from ovate to ovate-oblong or cuneate, rarely exceeding 1 in., irregularly toothed, 3- or 5-nerved, rather thick, the upper ones smaller and more sessile, passing into leafy bracts with the stipules adnate. Flowers sessile, 1 to 3 together in the upper leaves and bracts, forming a terminal leafy spike sometimes a foot long and very dense, usually shorter, with the lower flowers distant. Calyx 5-angled, about 3 lines long. Petals scarcely longer. Stamens usually under 20. Styles long and slender. Carpels 5, glabrous, not exceeding the calyx, very angular and reticulate, terminating in short connivent points.—*Lawrencia spicata*, Hook. Ic. Pl. t. 261; Hook. f. Fl. Tasm. i. 48; *Sida Lawrencia*, F. Muell. Pl. Vict. i. 162.

Victoria. Salt marshes, scattered along the seacoast, and subsaline places of the N. W. desert country, *F. Mueller.*

Tasmania. Flinders Island, Bass's Straits, *Gunn;* Great Swan Port, *Backhouse.*

S. Australia. At various points along the coast, *R. Brown, F. Mueller*, and others.

W. Australia. Swan River, *Drummond, Coll.* 1845, *n.* 302; Sussex district, *Preiss, n.* 2381; Hamden, *Clarke;* Port Gregory, *Oldfield.*

Var. *pubescens.* Sprinkled with loose stellate hairs, and more branching, with the spikes more interrupted at the base, but always close at the top.—N.W. interior of Victoria, and in S. Australia.

4. **P. glomeratus,** *Benth. in Journ. Linn. Soc.* vi. 103. A glabrous or slightly hoary, decumbent and much-branched herb, with ascending branches often above 1 ft. high. Leaves cuneate-oblong, toothed at the end, resembling those of *P. spicatus*, but usually narrower and more gradually narrowed into the petiole. Flowers all axillary, usually 3 together and sessile, forming distant clusters along the leafy branches and never collected into a spike, the ends of the branches all barren. Flowers nearly those of *P. spicatus*, but smaller, and the stamens and styles much shorter.—*Lawrencia glomerata*, Hook. Ic. Pl. t. 417.

S. Australia. S. coast, *R. Brown.*

W. Australia. Swan River, *Drummond;* Port Gregory, *Oldfield* (a hoary variety).

F. Mueller unites this with *P. spicatus*, but I see no tendency to the spicate inflorescence so characteristic of that species, besides the general differences in habit and foliage.

5. **P. diffusus,** *Benth.* Herbaceous, much-branched, diffuse or prostrate, sometimes not exceeding 2 or 3 in., sometimes nearly 1 ft. long, but much more slender than *P. glomeratus*, glabrous or sprinkled with a few stellate hairs. Leaves on long petioles, orbicular or obovate, rarely exceeding ½ in. in diameter, and often much smaller, coarsely crenate. Flowers axillary, 1 to 3 together, the males on pedicels of 3 to 4 lines, the females sessile. Calyx broadly campanulate, slightly angular, not 2 lines long. Petals in the males much longer, in the females small and persistent. Stamens 10 to 15, or fewer in the females. Styles of the females long and acute. Carpels 5, glabrous, not exceeding the calyx, ending in short connivent points, and not separating very readily.

W Australia. Swan River, *Drummond, n.* 104, 137, and 246 (females), and *n.* 275, 5*th Coll.* (males).

6. **P. squamatus,** *Benth. in Journ. Linn. Soc.* vi. 103. A rigid tortuous shrub, the leaves and other herbaceous parts densely covered with small peltate, scurfy scales, the young branches often simple and erect, 1 ft. long or more, the short ones rarely spinescent. Leaves oblong-linear, entire, the larger ones above 1 in. long and narrowed into a long petiole with small sessile ones clustered in their axil, the floral ones rarely exceeding ½ in. Flowers small, closely sessile in axillary clusters, not spicate. Calyx not 2 lines long, very scurfy, with obtuse lobes. Petals narrow, scarcely exceeding the calyx, and very small in the females. Carpels 3, 4, or 5, the styles protruding considerably beyond the calyx, the stigmatic part somewhat dilated and ending in a long point. Ripe fruit not seen, but only 1 or 2 carpels appear to enlarge.—*Lawrencia squamata,* Nees, in Pl. Preiss. i. 242.

N. Australia. Swan River, *Drummond, 4th Coll. n.* 106, *Preiss, n.* 1231.

7. **P. microphyllus,** *F. Muell. Fragm.* i. 29. Very closely allied to *P. squamatus*, and similarly covered with scurfy scales, but a lower, more tortuous, and more branched shrub, the smaller branches slender and often spinescent. Leaves from linear to oblong-cuneate, rarely exceeding ½ in. and usually much smaller, obtuse or 3-toothed at the end, more or less tapering at the base. Flowers small, sessile or nearly so, 1 to 3 together in

the axils, not spicate. Calyx when in flower not above 1½ line long. Carpel usually single, enclosed in the calyx and membranous as in *P. sidoides.*—*Halothamnus microphyllus*, F. Muell. Pl. Vict. i. 159.

Victoria. Sandy, especially subsaline inland localities or in the so-called salt-bush country, thence extending through many parts of the Murray desert, *F. Mueller.*

S. Australia. In the littoral tracts, *F. Mueller;* bays and islands, S. coast, *R. Brown.*

W. Australia, *Drummond, Coll.* 1845, *n.* 208, and *4th Coll. n.* 252.

4. SIDA, Linn.

Bracteoles none, or small and distant from the calyx. Calyx 5-toothed or 5-lobed. Staminal column divided at the top into several filaments. Ovary-cells 5 or more, verticillate, 1-ovulate. Style-branches as many as cells, filiform or slightly clavate, with terminal, capitate or truncate stigmas. Fruit-carpels either obtuse or with connivent points, seceding from the axis, indehiscent or opening shortly at the top in 2 valves. Seed pendulous or horizontal, with a dorsal raphe.—Herbs or shrubs, usually clothed with a soft or whitish stellate tomentum. Stipules in all the Australian species except *S. Hookeriana*, subulate and deciduous. Flowers sessile or pedunculate, axillary or in terminal heads, spikes, or racemes, of various colours and sometimes large, but most frequently rather small, yellow, or whitish.

The genus, even as now limited to the exclusion of the *Abutilons*, is large, and widely spread over the warmer regions of the globe, but most abundant in America. Of the Australian species three are common tropical weeds, the remainder all endemic.

§ 1. *Calyx without prominent ribs or angles. Carpels strongly reticulate on the sides* (except *S. pleiantha*), *indehiscent, or nearly so, never aristate. Perennials or shrubs. Leaves undivided.*

Flowers 1 or 2 together, on slender pedicels, articulate near the top.
  Calyx-lobes obtuse, not protruding beyond the broad part of the fruit.
    Carpels strongly wrinkled on the back. Fruit 2½ to 4 lines diameter . . . . 1. *S. corrugata.*
    Carpels not, or very slightly wrinkled. Fruit not exceeding 2 lines diameter. Leaves and flowers very small . . . . 2. *S. intricata.*
  Calyx-lobes acute or scarcely acuminate, remaining herbaceous, and not much enlarged after flowering.
    Leaves ovate or ovate-lanceolate, cordate at the base . . . . 3. *S. macropoda.*
    Leaves lanceolate or oblong-lanceolate, not cordate . . . . 4. *S. virgata.*
  Calyx-lobes acuminate, with long, subulate, woolly points . . . 5. *S. cryphiopetala.*
  Calyx-lobes enlarged and thinner or scarious after flowering.
    Leaves lanceolate or oblong. Carpels 6 to 8.
      Fruiting calyx about ½ in. diameter, slightly spreading; lobes narrow, ovate-lanceolate . . . . 6. *S. petrophila.*
      Fruiting calyx ¾ in. diameter, very spreading; lobes broadly ovate, scarious . . . . 7. *S. calyxhymenia.*
    Leaves cordate-ovate or orbicular. Carpels above 15. Fruiting calyx 2 in. diameter . . . . 8. *S. physocalyx.*
Flowers clustered, several together. Pedicels short, not articulate.
  Flowers nearly sessile. Tomentum dense, or rarely scanty. Carpels reticulate on the side . . . . 9. *S. subspicata.*
  Flowers pedicellate. Tomentum thin or floccose. Carpels not reticulate . . . . 10. *S. pleiantha.*

§ 2. *Calyx 5-angled, prominently 10-ribbed. Carpels not reticulate on the sides, and opening in 2 short valves at the top. Herbs or undershrubs. Leaves undivided.*

Leaves ovate or narrow, whitish with a close tomentum on both sides.
Carpels 5 . . . . 11. *S. spinosa.*
Leaves ovate or narrow, whitish with a close tomentum underneath.
Carpels about 10 . . . . 12. *S. rhombifolia.*
Leaves broad, cordate (or rarely narrow). Tomentum soft, loose, or
velvety. Carpels about 10 . . . . 13. *S. cordifolia.*

§ 3. *Calyx with 15 or 20 nerves prominent when in fruit. Carpels numerous. Styles free to the base. Leaves undivided.*

Calyx enlarging little after flowering, open at the top . . . . . 14. *S. platycalyx.*
Fruiting calyx very large, membranous, quite closed over the fruit 15. *S. inclusa.*

§ 4. *Calyx 10-ribbed at the base, each lobe having also 2 intramarginal veins. Annual, with deeply-lobed leaves* . . . . 16. *S. Hookeriana.*

1. **S. corrugata,** *Lindl. in Mitch. Three Exped.* ii. 13. Rootstock and often the base of the stem woody, the branches usually diffuse or procumbent and under 1 ft. long, or in some varieties elongated, slender, and divaricate, attaining fully 2 ft., more or less hoary as well as the leaves with stellate hairs or short pubescence. Leaves orbicular, ovate or lanceolate, crenate, mostly $\frac{1}{2}$ to 1 in. long, cordate or obtuse at the base, on petioles shorter than the laminæ, and sometimes very short. Pedicels axillary, 1 to 3 together, filiform or slender, rarely as long as the leaves, articulate below the top. Calyx tomentose, 2 to $2\frac{1}{2}$ lines long, the lobes broad and obtuse, spreading under the fruit. Petals yellow, about twice the length of the calyx. Stamens 10 to 15. Fruit depressed-globular, varying from $2\frac{1}{2}$ to near 5 lines diameter, tomentose or nearly glabrous, the obtuse often-raised centre marked with radiating furrows formed by the grooved connivent summits of the carpels, the circumference deeply wrinkled. Carpels 6 to 10, indehiscent, strongly reticulate on the sides. Seeds glabrous or slightly tomentose.—F. Muell. Pl. Vict. i. 163.

N. Australia. Upper Victoria river and Sturt's Creek, *F. Mueller.*

Queensland. On the Maranoa, *Mitchell;* in the interior, *Leichhardt.*

N. S. Wales. Broadland on the Hawkesbury river, *R. Brown;* desert land of the interior from Peel's range and the Bogan to the S. Australian frontier, *A. Cunningham, Fraser, Mitchell* and others.

Victoria. Desert tracts, basaltic downs and ridges from Bacchus Marsh to the N.W. part of the colony, *F. Mueller.*

S. Australia. S. coast, *R. Brown;* Flinders range, *A. Cunningham;* and N.W. interior, *Sturt.*

W. Australia. Between Moore and Murchison rivers, *Drummond, 5th Coll. n.* 106; Dirk Hartog's Island, *A. Cunningham.*

This plant assumes forms apparently so distinct that it is difficult to believe that some of them ought not to be considered as species. In attempting, however, to fix their limits, so many intermediate specimens have presented themselves, that I feel compelled to follow F. Mueller in uniting them under one name. The following appear to be the most marked:—

a, orbicularis. Stems short, diffuse, and tomentose. Leaves orbicular or broadly ovate, deeply and coarsely crenate, cordate at the base. Flowers and fruits rather large. *S. corrugata,* Lindl. l. c.; *S. interstans* and *S. spodochroma,* F. Muell. in Linnæa, xxv. 383. Chiefly in Victoria and N. S. Wales.

b, ovata. Stems usually more slender and elongated. Leaves mostly cordate-ovate, with small and regular crenatures, often softly tomentose. Petioles often short, and sometimes very short. Flowers and fruits rather small. *S. filiflora*, Lindl. in Mitch. Three Exped. ii. 15; *S. filiformis*, A. Cunn. in Mitch. Trop. Austr. 361.—N. Australia including a var. with very short pedicels, Queensland, N. S. Wales, Victoria, and S. Australia. *S. pedunculata*, A. Cunn. ms., from Peel's range, is a remarkable form, densely tomentose, with the lower leaves 2 in. long, and the lower peduncles elongated, bearing a leafless raceme of several flowers, with rigid stipulary bracts; the inflorescence in the upper part quite normal. *S. armatopoda*, F. Muell. in Linnaea, xxv. 382, has smaller and less wrinkled fruits, although still much more so than in *S. intricata*, and the foliage is quite that of the present variety.

c. angustifolia. Stems slender, often nearly glabrous as well as the leaves. Leaves cordate-lanceolate, deeply toothed. Flowers and fruits small. Extends over the whole range of the species, and the only form hitherto found in W. Australia. *S. humillima*, F. Muell. in Trans. Phil. Soc. Vict. i. 12, is a small hoary form, with larger leaves, approaching sometimes the first variety. Some specimens of A. Cunningham's from Dirk Hartog's Island have the leaves more densely white-tomentose.

d. trichopoda. Like the last, but the lanceolate or oblong-linear leaves are never cordate at the base, and the slender pedicels mostly exceed the leaves. *S. trichopoda*, F. Muell. in Linnaea, xxv. 384. On nearly the whole range of the species, excepting W. Australia.

e. goniocarpa, F. Muell. Foliage of the last var., but the fruit larger, the angles of each carpel bordered by vertical wings, forming on the fruit as many very prominent angles as there are carpels. Nangavera in N. S. Wales, *Victorian Expedition.*

2. **S. intricata,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 19, *and in Hook. Kew Journ.* viii. 9. This form also is now reduced by F. Mueller (Pl. Vict. i. 163) to the *S. corrugata.* I am inclined however to keep it distinct, as the characters appear on the dried specimens to be tolerably constant. It is a small or slender, very much branched tomentose undershrub, resembling the var. *ovata* of *S. corrugata* in general characters, but with much smaller leaves and very much smaller flowers, on short slender pedicels, the fruits not above 2 lines diameter, consisting of 5 to 8 tomentose carpels, not furrowed at their points, and smooth or only very slightly wrinkled on the back.

N. Australia. Stony ridges of the Upper Victoria river, *F. Mueller.*

N. S. Wales. From Molle's Plains, *A. Cunningham*, to the Darling and Murray rivers, *F. Mueller.*

S. Australia. In the interior near Mount Hope, *F. Mueller.*

W. Australia, *Drummond*, 5*th Coll. n.* 105.

3. **S. macropoda,** *F. Muell. Herb.* An erect, branching shrub, densely clothed with a stellate tomentum, thick and often yellowish on the branches, almost velvety on the leaves. Leaves ovate-cordate, obtuse, 1 to 2 in. long, crenate, thick and soft, deeply wrinkled above, prominently veined underneath. Pedicels filiform, sometimes exceeding the leaves. Calyx-lobes acuminate or acute, closed over the fruit or spreading. Petals yellow, only shortly exceeding the calyx. Fruit 3 or 4 lines diameter, with the radiating striae in the centre and the carpels wrinkled on the back as in *S. corrugata*, from which this species differs in stature, foliage, and the acute calyx-lobes.

N. Australia. Summits of Sea range, head of Hooker's Creek, Arnhem's Land and Gulf of Carpentaria, *F. Mueller.* A specimen of *Leichhardt's*, from the Brigalow scrub on Bokhara Creek, appears to be the same species.

Var. (?) *cardiophylla*, F. Muell. Tomentum more dense, but closer; leaves shorter, and nearly orbicular; pedicels shorter.—Sturt's Creek, *F. Mueller.* This may possibly be a distinct species, but the specimens are not sufficiently advanced to determine. In other specimens in young bud only, these buds are sessile or nearly so; the pedicel probably grows out rapidly before the flower expands, and may sometimes remain very short.

4. **S. virgata,** *Hook. in Mitch. Trop. Austr.* 361. This resembles at first sight, especially in the leaves, the *S. calyxhymenia*, and in some respects some narrow-leaved forms of *S. corrugata*; but the calyx does not enlarge as in the former, and its lobes are not obtuse as in the latter, and the stellate tomentum is dense and soft, almost woolly, and often fulvous. It appears to be an erect shrub, with long twiggy branches. Leaves shortly petiolate, lanceolate or oblong-linear, often exceeding 1 in., obtuse at the base, denticulate, less tomentose above than underneath. Pedicels slender, but rarely as long as the leaves. Calyx very tomentose, not prominently ribbed, the acute lobes about as long as the cup. Petals yellow, twice as long as the calyx, varying from 3 to 4 lines. Fruit about 3 lines diameter, depressed, with the centre slightly projecting. Carpels 6 to 8 or rarely more, their radiating summits scarcely furrowed, wrinkled on the back, strongly reticulate on the sides.

N. Australia. Sandstone table-land of the Upper Victoria river, *F. Mueller.*

Queensland. On the Maranoa, *Mitchell.*

S. Australia. In the interior at Depot Creek, *F. Mueller.*

Var. *phæotricha.* Stellate hairs very fulvous, almost woolly; carpels very tomentose, less wrinkled, the centre of the fruit more prominent.—*S. phæotricha*, F. Muell. in Linnaea, xxv. 382. In the interior of S. Australia.

5. **S. cryphiopetala,** *F. Muell. Fragm.* iii. 4. A shrub, nearly allied to *S. virgata*, but the tomentum longer and denser, almost woolly or floccose. Leaves ovate-lanceolate or cordate, often 2 in. long. Calyx densely woolly-hirsute, the lobes attaining 3 or 4 lines, including their long soft hirsute filiform points, exceeding the petals in the specimens seen. Carpels 5 or more, wrinkled on the back, reticulate on the sides, their summits forming a strongly projecting centre to the fruit.

N. Australia. Brindley's Bluff, Macdonnell ranges, *M'Douall Stuart (Herb. F. Muell.)*

6. **S. petrophila,** *F. Muell. in Linnæa*, xxv. 381. A hoary tomentose erect shrub of 2 to 4 ft., with the habit, foliage, and inflorescence of *S. calyxhymenia*, but the flowers are not nearly so broad, the unexpanded bud rather ovoid than depressed-globular, the petals longer than the calyx, and the fruiting calyx not nearly so much enlarged, the ovate-lanceolate lobes not exceeding 3 lines in length, not half so broad as in *S. calyxhymenia*, and of a much thicker consistence. Fruit depressed, tomentose, wrinkled on the circumference and furrowed between the carpels as in *S. calyxhymenia*, but the carpels are usually about 7.

N. S. Wales. Mount Caley, *A. Cunningham*; Peel's range, *Fraser*; Toguya hills, Darling river, *Victorian Expedition.*

S. Australia. Flinders range, and towards Lake Torrens, *A. Cunningham, F. Mueller*; between Stokes range and Cooper's Creek, *Wheeler*; towards Spencer's Gulf, *Warburton.*

7. **S. calyxhymenia,** *J. Gay, in DC. Prod.* i. 462. An erect shrub, hoary all over with a stellate tomentum much closer than in *S. virgata*, which this species generally resembles in habit and foliage. Leaves shortly petiolate, lanceolate or oblong-linear, or the lower ones ovate-lanceolate, mostly 1 to 1½ in. long, slightly toothed, obtuse at the base. Pedicels 1 to 3 to-

gether, mostly shorter than the leaves. Calyx tomentose, not prominently ribbed, at first campanulate as in *S. virgata*, but with the lobes more obtuse and very soon enlarging; when in fruit very spreading, fully ¾ in. diameter, the broadly ovate lobes thin and transparent. Petals yellow, rather longer than the calyx before it enlarges. Stamens 10 to 15. Fruit nearly globular, with a raised conical centre, the circumference wrinkled and grooved between the carpels. Carpels 5, reticulate on the sides. *Fleischeria pubens*, Steud. in Pl. Preiss. i. 237; Steetz, l. c. ii. 366.

S. Australia. A specimen in Herb. Muell. from Margaritte river, *Babbage's Expedition*, appears to belong to this species, but the calyx is not yet sufficiently advanced to determine it absolutely.

W. Australia. Swan River, *Drummond*; shady rocks of Mount Mathilde, *Preiss*, *n.* 1662; Murchison river, *Oldfield*.

8. **S. physocalyx,** *F. Muell. Fragm.* iii. 3. A shrub, densely clothed with a soft, woolly, almost floccose tomentum. Leaves petiolate, cordate-ovate or orbicular, very obtuse, 1 to 2 in. long, crenate, thick and soft. Stipules remarkably long and filiform. Flowers not seen. Fruiting calyx pedunculate in the upper axils, very much enlarged, thin, scarious, and reticulate, broadly 5-lobed, the angles very prominent, so as to give the sides a cordate form, expanding to 2 in. diameter. Carpels numerous (above 15), glabrous, tuberculate or almost muricate, forming a depressed disk-like fruit of about 5 lines diameter.

N. Australia. Hammersley range, N.W. coast, *F. Gregory's Expedition.*

9. **S. subspicata,** *F. Muell. Herb.* An erect shrub, sparingly tomentose and green, or densely tomentose like *S. virgata* and *S. macropoda*, but at once known by the inflorescence. Leaves from cordate-ovate to lanceolate, 1 to 2 in. long, obtuse, crenate, cordate or rounded at the base, slightly wrinkled above, with the veins prominent underneath, scabrous, velvety or densely tomentose. Flowers small, nearly sessile, clustered or rarely solitary, the upper clusters forming often an irregular terminal spike, with few small floral leaves. Calyx not ribbed, the lobes acute, at least as long as the tube and closing over the fruit, but not covering it. Petals nearly twice as long. Stamens often under 10. Fruit nearly globular, but grooved between the carpels; carpels 5 or 6, tomentose, reticulate on the side, but not wrinkled on the back, and not acuminate.

N. Australia. Gulf of Carpentaria. *R. Brown*; Hooker and Sturt's Creeks, *F. Mueller*

Queensland. Keppel Bay, *R. Brown*; N.E. coast, *A. Cunningham*; Brisbane river, *Fraser*, *F. Mueller*; Burnett and Dawson rivers, *F. Mueller*; Rockhampton, *Thozet.*

N. S. Wales. Kirkton, Upper Hunter river, *Backhouse*; Clarence river, *Beckler.*

10. **S. pleiantha,** *F. Muell. Herb.* A shrub or undershrub, with elongated branches, green or hoary with a loose stellate tomentum, sometimes floccose. Leaves petiolate, the smaller ones nearly orbicular, ½ in. long, the larger ones ovate or ovate-lanceolate, 1 to 2 in., toothed, rounded or scarcely cordate at the base. Flowers small, clustered several together, the pedicels 2 to 4 lines long, not articulate. Calyx broadly campanulate, when in flower about 1½ lines long, with ovate-acute tomentose lobes, somewhat enlarged when in fruit, the lobes broad, herbaceous, glabrous, and connivent over the

fruit, with projecting undulate sinuses. Stamens often not more than 10. Fruit depressed-orbicular, about 3 lines diameter, nearly glabrous, not wrinkled, but strongly grooved between the carpels. Carpels 7 to 10, not reticulate on the sides.

Queensland. Peak Downs, *F. Mueller.*

11. **S. spinosa,** *Linn.; DC. Prod.* i. 460. An annual or sometimes perennial, and woody at the base, with the habit and inflorescence of the narrow-leaved forms of *S. rhombifolia*, but the whole plant, including both sides of the leaves, whitish with a minute tomentum, which is soft and more dense on the calyx. Leaves from ovate to lanceolate. Carpels almost always 5 only, more erect and less readily detached than in *S. rhombifolia*, often slightly reticulate, awnless or with short awns.—A. Gray, Gen. Ill. t. 123.

N. Australia. N. coast, *R. Brown;* Upper Victoria river, *F. Mueller;* Quail Island, *Flood.* The species is not uncommon in tropical Asia, more rare in America. It derives its name from the stipules in falling off often leaving a prominent tubercular base, more distinct in this than in any other species, although the character is even here not constant.

12. **S. rhombifolia,** *Linn.; DC. Prod.* i. 462. A perennial or undershrub, very variable in stature, sometimes tall and erect with the larger leaves ovate and 3 in. long, the Australian specimens more generally representing the more spreading forms, with rigid virgate minutely tomentose branches, and small narrow leaves, rarely exceeding 1 in., varying from ovate-lanceolate to narrow-lanceolate, or from nearly obovate to oblong-cuneate, always shortly petiolate, toothed, nearly glabrous above and more or less whitened underneath with a short tomentum. Pedicels mostly longer than the petiole and sometimes as long as the leaf, articulate about the middle. Flowers rather small, yellow. Calyx broad, glabrous or slightly hoary, prominently 10-ribbed at the base. Carpels about 10, with or without terminal erect-connivent awns, angled at the back, neither wrinkled nor reticulate, opening at the top in two very short valves.

N. Australia. Port Essington, *Armstrong.*

Queensland. Brisbane river, *F. Mueller.*

N. S. Wales. Blue Mountains, *Miss Atkinson;* Paramatta, introduced from the Mauritius, and now a troublesome weed, *C. Moore.* The species is one of the commonest tropical weeds, both in the New and the Old World, and includes *S. retusa*, Linn., *S. rhomboidea*, Roxb., *S. philippica*, and *S. compressa*, DC., and several other published forms.

Var. (?) *incana.* Leaves whitish on both sides as in *S. spinosa*, but carpels about 10, with long awns.—Nicholson river, *F. Mueller;* Comet river, *Leichhardt;* the specimens not complete.

13. **S. cordifolia,** *Linn.; DC. Prod.* i. 464. A rather coarse, branching, erect or rarely decumbent herb or undershrub, more or less clothed with a soft stellate tomentum or velvety hairs, the branches often also hirsute with spreading hairs. Leaves on rather long petioles, broadly cordate or almost orbicular or rarely ovate-lanceolate, 1 to 1½ or rarely 2 in. long, usually soft and thick. Flowers small, yellow, on short axillary pedicels or clustered into short leafy racemes. Calyx 10-ribbed at the base, softly tomentose. Carpels about 10 or sometimes fewer, smooth or slightly wrinkled, opening at the top in 2 valves, and in the usual form terminating in rather long erect-connivent awns.

N. Australia. Port Essington, *Armstrong ;* N. coast, *Bynoe.*
Queensland. Peak Downs, *F. Mueller.*

The species is very abundant in almost all tropical countries, and includes *S. althæifolia*, Lam., and several other supposed species.

Var. (?) *mutica.* Carpels without the awns which generally distinguish the species. The leaves are very soft and velvety, but small and narrow, the specimens have, however, lost those of the primary branches. —Macarthur river, Gulf of Carpentaria, *F. Mueller.*

14. **S. platycalyx,** *F. Muell. Herb.* Shrubby and densely clothed with a soft floccose or velvety stellate tomentum. Leaves ovate-cordate or nearly orbicular, obtuse, crenate, 1 in. long or more, soft and thick. Pedicels as long as the leaves, soft, articulate above the middle. Calyx broadly campanulate, about 5 lines long, with a broadly obtuse base, the lobes erect or spreading, shorter than the tube, densely tomentose outside, each sepal marked with 3 prominent ribs, with another almost equally prominent at the junction of the sepals. Petals broad, shorter than the calyx. Stamens very numerous, the staminal tube almost truncate at the top. Carpels about 24, closely packed in a tomentose ring round the base of the styles, which are free almost to the base with small capitate stigmas. Fruit not seen.

N. Australia. Sturt's Creek, *F. Mueller.*

15. **S. inclusa,** *Benth.* A shrub, densely velvety tomentose or almost floccose. Leaves ovate or orbicular, often cordate, obtuse, crenate, mostly above 1 in. long. Flowers not seen. Fruiting calyx on peduncles of about 1 in., membranous and inflated, above 1 in. diameter, tomentose, marked with numerous longitudinal veins or ribs, the short lobes connivent, so as completely to enclose the fruit. Carpels numerous, stellate-hirsute, echinate with rather soft hirsute spines, forming a depressed orbicular fruit of nearly 1 in. diameter.

N. Australia. Hammersley range, N.W. coast, *F. Gregory's Expedition.* This species and *S. platycalyx* are distinguished in the genus by their many-ribbed calyx; as the one is only known in fruit, and the other in flower, or scarcely past, the distinction between the two cannot be established with certainty, but *S. platycalyx* certainly shows no tendency to the singular enlargement of the calyx of *S. inclusa.*

16. **S. Hookeriana,** *Miq. in Pl. Preiss.* i. 242. An erect or decumbent annual, 1 or rarely 2 ft. high, glabrous or with a few small scattered hairs. Stipules narrow-lanceolate. Leaves on long petioles, nearly orbicular in circumscription, but deeply divided into 3 or 5 ovate or cuneate deeply toothed lobes. Flowers small, white, usually 2 together, one on a long pedicel articulate near the top, the other nearly sessile. Calyx 5-ribbed, glabrous or nearly so, campanulate when in flower and about 2½ lines long; when in fruit broadly spreading, as in *Anoda*, about ½ in. diameter, with broadly ovate lobes, the ribs on reaching the sinus dividing into intramarginal veins along each lobe. Petals about as long as the calyx. Staminal tube slender. Fruit depressed-orbicular, about 3 lines diameter, the centre not prominent, glabrous and smooth. Carpels about 10, not awned, with very thin sides, leaving, when they fall, their dorsal filiform nerves attached to the column.—*S. leiophloia*, Miq. in Pl. Preiss. i. 241.

W. Australia. King George's Sound, *R. Brown ;* Swan River, *Drummond ;* Rottenest Island and Wellington district, *Preiss, n.* 1894 and 1896; Blackwood and Vasse rivers, *Oldfield.*

S. rupestris, Miq. l. c. 241, which I have not seen, appears from the description to be the same species with the young parts pubescent. *S. Hookeriana* is perhaps nearer allied in appearance to *Modiola caroliniana* than to *Sida triloba*, Cav., but differs from both in the structure of the fruit; *S. triloba* is moreover a perennial, with differently-shaped leaves and a dissimilar venation of the calyx.

5. HOWITTIA, F. Muell.

Bracteoles none. Calyx 5-lobed. Staminal column divided at the top into several filaments. Ovary-cells 3, rarely 4, with 2 collateral ovules in each. Style elongated with as many exceedingly short branches as cells and large capitate stigmas. Capsule depressed-globular, opening loculicidally in 3 valves bearing the dissepiments in their centre, rarely splitting also septicidally. Seeds ascending, reniform. Embryo involute with deeply 3-fid cotyledons.—Shrub, with the habit of a *Sida.*

The genus is limited to a single endemic species.

1. **H. trilocularis,** *F. Muell. in Hook. Kew Journ.* viii. 9, *and Pl. Vict.* i. 167. *t.* 4. A tall, erect, sarmentose shrub, attaining sometimes 20 ft., but often much smaller, clothed with a rough stellate tomentum like that of some *Lasiopetala*. Leaves shortly petiolate, mostly ovate-lanceolate, obtuse, 1 to 2 in. long, rounded or slightly cordate at the base, the margins recurved, entire or slightly toothed, green, scabrous, and with impressed veins above, white or yellowish, with a denser tomentum underneath; in luxuriant shoots they are much larger, ovate-cordate or ovate-lanceolate, and coarsely toothed. Stipules minute and deciduous. Pedicels axillary, shorter than the leaves. Calyx 3 to 4 lines long, tomentose. Petals twice as long, purple or rarely white. Staminal column very short. Style often apparently simple to the stigmas. Capsule hirsute, shorter than the calyx. Seeds glabrous.

N. S. Wales. Blue Mountains, *R. Brown*, *A. Cunningham*; Valley of the Grose, *Miss Atkinson*; Wonboyn river, and near Twofold Bay, *F. Mueller.*

Victoria. Coast-ridges of Gipps' Land. *F. Mueller*; Victoria ranges, *Wilhelmi*; Mount Arapiles, *Dallachy*; Tattiara country, *Woods.*

6. ABUTILON, Gærtn.

Bracteoles none. Calyx 5-lobed. Staminal column divided at the top into several filaments. Ovary-cells 5 or more, verticillate, each with 3 or more, rarely 2, ovules. Style-branches as many as cells, filiform or club-shaped, with terminal stigmas. Fruit-carpels united at the base or entirely seceding, rounded or angular or with diverging points (not connivent) at the top, opening in 2 valves, without internal appendages. Seeds nearly reniform, the upper ones usually ascending, the lower ones pendulous or horizontal.—Herbs or shrubs, rarely trees, usually clothed with a soft stellate tomentum. Leaves usually cordate, angular or lobed, rarely narrow; petioles usually long (except in *A. crispum*). Stipules in all the Australian species subulate and deciduous. Flowers in the Australian species axillary, yellow or rarely white, the pedicels articulate above the middle or near the top.

A large genus, distributed over the tropical and warm regions of the globe, chiefly

American. Of the 18 Australian species, three are widely distributed over tropical Asia and Africa; one, *A. Avicennæ*, is Mediterranean and Asiatic, but scarcely tropical; one, *A. auritum*, extends only to the Indian Archipelago; one, *A. crispum*, is common to both the New and the Old World, and the remaining 12 are endemic. The genus has frequently been united with *Sida*, but the characters derived from the diverging carpels with more than 1 ovule in each, as contrasted with the converging uniovulate carpels of *Sida*, are too constant and convenient to be neglected, in groups so very numerous in species. The differential characters given to several of the following species from the tropical regions, or from the deserts of the interior, are as yet very unsatisfactory, owing to the imperfect state of many of the specimens, often mere fragments.

§ 1. *Capsule truncate or concave at the top. Carpels (usually 2- or 3-seeded) angular-pointed or awned at the upper outer edge, persistent, or rarely at length deciduous leaving the filiform placenta attached to the axis.*

- Carpels (usually 10 or fewer) not exceeding the calyx-lobes, the points erect, or rarely divergent. Stems usually (perhaps always) shrubby.
  - Calyx-lobes shorter than the tube.
    - Petals adnate high up the glabrous staminal tube. Calyx tubular, 1 in. long . . . . . 1. *A. tubulosum.*
    - Petals shortly adnate to the pubescent base of the staminal tube.
      - Calyx 1 in. long, campanulate, lobes acute, nearly as long as the tube. Petals twice as long . . . . . 2. *A. amplum.*
      - Calyx ½ to ¾ in., lobes acuminate or rather obtuse, spreading, much shorter than the tube.
        - Petals above 1 in. long . . . . . 3. *A. leucopetalum.*
        - Petals shortly exceeding the calyx . . . . . 4. *A. Mitchelli.*
      - Calyx about ½ in., rather inflated, truncate, sinuate, or with very short obtuse lobes.
        - Petals very small. Staminal column much longer than the calyx . . . . . 5. *A. micropetalum.*
        - Petals very small or shortly exceeding the calyx, the staminal column not long . . . . . 6. *A. cryptopetalum.*
        - Petals twice as long as the calyx. Leaves deeply lobed . 7. *A. geranioides.*
        - (The last 2 species with more slender branches and a closer hoary tomentum than *A. micropetalum.*)
  - Calyx-lobes longer than the tube or cup, acuminate.
    - Calyx-lobes very concave and prominently keeled. Carpels about 10, scarcely acuminate . . . . . 8. *A. otocarpum.*
    - Calyx-ribs or angles scarcely prominent. Carpels 4 or 5, acuminate . . . . . 9. *A. subviscosum.*
- Carpels usually exceeding the calyx-lobes, the points often divergent. Herbs usually tall, sometimes hard, almost woody at the base.
  - Stems coarse and erect. Leaves broadly cordate.
    - Capsule truncate. Carpels numerous, the points very short. Tomentum close and dense, usually without spreading hairs.
      - Stipules small and subulate. Flowers mostly axillary . . 10. *A. indicum.*
      - Stipules broadly semisagittate. Flowers in terminal leafless racemes or panicles . . . . . 11. *A. auritum.*
    - Capsule truncate. Carpels about 10, with long divergent points. Pubescent or loosely tomentose . . . . . 12. *A. Avicennæ.*
    - Capsule contracted and angular at the top. Carpels numerous, without points. Tomentum dense, mixed with long spreading hairs . . . . . 13. *A. graveolens.*
  - Stems rather slender. Leaves ovate or cordate-lanceolate. Capsule truncate, with short divergent points . . . . . 14. *A. oxycarpum.*

§ 2. *Carpels (often 1-seeded by abortion) rounded or angled at the top, quite distinct, and seceding from the axis when fully ripe* (Gayoides, *Endl.*)

Carpels numerous (about 20), closely packed, very hirsute. Tall herbs, with large, broadly cordate leaves.
  Carpels angular at the top, leaving persistent filiform placentas . 13. *A. graveolens.*
  Carpels rounded at the top, completely deciduous . . . . . . 15. *A. muticum.*
Carpels rarely more than 10, glabrous or slightly tomentose, not scarious. Leaves mostly cordate-orbicular.
  Densely velvety-tomentose (shrubby ?). Petals shortly exceeding the calyx . . . . 16. *A. Cunninghami.*
  Low undershrub, shortly tomentose or pubescent, often with spreading hairs. Petals fully twice as long as the calyx . . 17. *A. Fraseri.*
Carpels 10 to 15, slightly hispid, enlarged and scarious when ripe.
  Slender undershrub, with cordate, often almost sessile leaves . . 18. *A. crispum.*

Distinct as the two sections are in some instances, they are closely connected by *A. graveolens,* and some other intermediate species.

1. **A. tubulosum,** *Hook.; Walp. Ann.* ii. 158. Tall and shrubby, clothed with a dense, soft, close, or velvety tomentum. Leaves deeply cordate, ovate or lanceolate, almost acuminate, crenate, attaining 3 to 4 in., very soft and velvety. Pedicels much shorter than the leaves. Buds acuminate, prominent-angled. Calyx tubular, about 1 in. long, with 10 slightly prominent ribs, softly tomentose, the lobes acuminate, much shorter than the tube. Petals (yellow ?) nearly ¾ in. longer than the calyx, the claws adhering to nearly the middle of the glabrous staminal column. Capsule angular, about half the length of the calyx, softly villous; carpels 7 to 10, strongly acuminate on their outer edge, containing each usually 3 seeds. —*Sida tubulosa*, A. Cunn.; Hook. in Mitch. Trop. Austr. 390.

Queensland. Open woods on the Mooni river, *Mitchell;* Dawson river, *F. Mueller.*
N. S. Wales. Rocky whinstone hills on Liverpool plains, *A Cunningham.*

Var. (?) *breviflorum.* Petals shorter and broader, but glabrous and more adnate than in *A. leucopetalum;* the specimen, however, scarcely sufficient for accurate determination.—Dawson river, *F. Mueller.*

2. **A. amplum,** *Benth.* Tall and shrubby, the foliage and inflorescence softly tomentose-hirsute, not so white as in the allied species, and apparently somewhat viscid. Leaves deeply cordate, ovate, acuminate, crenate, 2 to 4 in. long, soft but green. Pedicels shorter than the leaves. Buds acuminate, prominently angled. Calyx, when open, broadly tubular-campanulate, about 1 in. long, tomentose-hirsute, with 10 slightly prominent ribs, the lobes broadly lanceolate, nearly as long as the tube. Petals (yellow ?) often twice as long as the calyx, much broader than in *A. tubulosum*, the claws adhering to the lower part only of the staminal column, and there very pubescent. Capsule angular, softly villous, about half the length of the calyx; carpels about 5, scarcely acuminate.

N. Australia. Harding river, S.E. of Nichol Bay, *F. Gregory's Expedition.*—F. Mueller is disposed to consider this as a variety of *A. tubulosum*, but the shape of the petals and their pubescent base are more those of *A. leucopetalum*, and the calyx is different from both. Further and more complete specimens may, however, considerably modify the circumscription of *A. tubulosum, amplum, leucopetalum,* and *Mitchelli,* which are all nearly allied to each other.

3. **A. leucopetalum,** *F. Muell. Herb.* A tall shrub, clothed with a soft velvety tomentum like *A. tubulosum*, but intermixed with long spreading

hairs on the branches, and paler on the under side of the leaves. Leaves deeply cordate, from orbicular to nearly lanceolate, often shortly acuminate, irregularly crenate or almost lobed, mostly shorter than in *A. tubulosum*. Flowers large and white, on short pedicels. Calyx broadly tubular-campanulate, ½ to ¾ in. long, 10-ribbed, scarcely acuminate in the bud, the lobes obtuse or shortly acuminate, shorter than the tube. Petals more than twice as long as the calyx, adnate only to the pubescent base of the staminal tube. Capsule as in *A. tubulosum*, but fully as long as the calyx-tube.—*Sida leucopetala*, F. Muell. Fragm. ii. 12.

N. Australia. Hooker's Creek and Upper Victoria river, *F. Mueller.*
N. S. Wales. Barrier range, *Victorian Expedition.*
S. Australia. Cooper's Creek, *Herb. Mueller.*

4. **A. Mitchelli,** *Benth.* Apparently shrubby, clothed with a dense, soft, velvety tomentum mixed with long spreading hairs. Leaves deeply cordate, orbicular or broadly ovate, often shortly acuminate, 1½ to 2½ in. long, crenate, very soft and thick. Pedicels shorter than the petioles. Calyx campanulate, 10-ribbed and somewhat 5-angled, 4 to 5 lines long, the acuminate spreading lobes shorter than the tube. Petals (yellow ?) shortly exceeding the calyx, pubescent at the base. Ovary-cells and style-branches about 10. Fruit not seen.

Queensland. Gullies in the ranges on the Maranoa, *Mitchell.* The plant has at first sight the aspect of *A. muticum*, but the calyx and ovary are quite different.

Var. (?) *mollissima.* Tomentum very dense and soft, but without the long hairs of the other specimens. Stony Ridge, *Mitchell.*

Abutilea cryptantha, F. Muell. in Linnea, xxv. 379, from a specimen without flower from Cudnaka, S. Australia, *F. Mueller* in Herb. Sonder, and from the description given, appears to be a form of *A. Mitchelli*, with semiabortive petals.

5. **A. micropetalum,** *Benth.* Shrubby, very densely and softly tomentose or velvety. Leaves deeply cordate, acuminate, 2 to 4 in. long, crenate. Pedicels short, in the upper axils. Calyx loosely campanulate, almost inflated, very shortly sinuate-toothed or almost truncate, 4 to 5 lines long, tomentose, slightly 5-angled and 10-ribbed. Petals, in some flowers at least, very small. Stamens very numerous, the slender column much longer than the calyx. Capsule as long as the calyx, truncate at the top; carpels about 10 to 12, persistent, angular, or scarcely pointed at the upper outer edge.—*Sida micropetala*, R. Br. Herb.

Queensland. Hills about Shoalwater Bay, *R. Brown.*
N. S. Wales. Bowen river, *Herb. Mueller* (*Herb. R. Br. and F. Muell.*).

6. **A. cryptopetalum,** *F. Muell. Herb.* Shrubby, but much more slender than the preceding species, clothed with a whitish tomentum, often intermixed on the young branches with a loose pubescence, the older branches nearly glabrous. Leaves cordate, from orbicular to ovate-lanceolate, obtuse, crenate, often under 1 in., the larger ones above 2 in. long, sometimes obscurely lobed, soft with a rather dense velvety tomentum. Pedicels rarely exceeding the leaves and sometimes very short. Calyx about 4 to 6 lines long, somewhat inflated, softly canescent with 10 prominent veins or ribs, the lobes much shorter than the tube. Petals often very small, but sometimes shortly exceeding the calyx. Capsule pubescent, about the length of the

calyx-tube. Carpels about 10, angular or shortly acuminate on the outer edge. Seeds 3 or fewer.—*Sida cryptopetala*, F. Muell. Fragm. ii. 11.

N. S. Wales. Mount Murchison, *Herb. Mueller.*
W. Australia. Swan River, *Drummond*; near White Peak, Champion Bay, *Oldfield.*

7. **A. geranioides,** *Benth.* A shrub, with slender branches like *A. cryptopetalum*, hoary with a close rather soft tomentum, without spreading hairs. Leaves deeply cordate, ovate to ovate-lanceolate, obtuse, 1 to 2 in. long, deeply 5-lobed with the middle lobe much longer, all deeply crenate or lobed, and often crisped. Pedicels axillary, ½ to 1 in. long. Calyx ovoid, inflated, above ½ in. long, softly hoary, with 10 prominent veins or ribs, almost truncate with very short obtuse lobes. Petals nearly twice as long as the calyx. Fruit not seen.—*Sida geranioides*, DC. Prod. i. 474.

W. Australia. Sterile islands, *Baudin's Expedition.*

8. **A. otocarpum,** *F. Muell. in Trans. Phil. Soc. Vict.* 1855, 13, *and in Hook. Kew Journ.* viii. 10. A tall shrub, densely clothed with a soft velvety tomentum, the branches and petioles almost villous. Leaves deeply cordate, orbicular or broadly ovate, mostly 1½ to 2½ in. long, rarely acuminate, crenate, very soft and thick. Pedicels much shorter than the leaves, often crowded at the ends of the branches Calyx 4 to 6 lines long, very prominently 5-angled, deeply divided into very concave, almost boat-shaped, strongly keeled, acuminate lobes, making the calyx intruded at the base. Petals slightly exceeding the calyx. Capsule villous, shorter than the calyx-lobes, narrowed at the top, depressed in the centre; carpels about 10, rather obtuse or scarcely pointed on the upper outer edge. Seeds 3 or fewer.

N. Australia. In the desert on Sturt's Creek, and on Gilbert river, *F. Mueller*; Nichol Bay, *F. Gregory.*
Queensland. Stokes range, *Wheeler.*
N. S. Wales. Mount Murchison, *Dallachy and Godwin*; Barrier range, Mount Goningbear, etc., *Victorian Expedition.* In these specimens the tomentum is closer, the flowers rather smaller, and the capsule closely tomentose, with the carpels more acute than in the Western ones, but they have the same remarkable calyx.

9. **A. subviscosum,** *Benth.* Apparently shrubby, with much of the aspect of *A. indicum*, but the branches, petioles, and pedicels greener and clothed with a viscid stellate pubescence intermixed with longer hairs. Leaves broad, deeply cordate, abruptly acuminate, 3 to 4 in. long, irregularly toothed, softly but sparingly pubescent above, tomentose and whitish underneath. Pedicels short. Calyx with slightly prominent angles, pubescent, deeply divided into acuminate lobes about ½ in. long. Petals exceeding the calyx, but imperfect in our specimens. Capsule shorter than the calyx-lobes, consisting of about 5 erect carpels, acuminate with rather long points.

Queensland? Subtropical regions of the interior, *Mitchell.*
There are in Herb. Muell. two shrubby *Abutila*, allied to *A. indicum*, which it is difficult to refer to any of the above species, but of which the specimens are insufficient to characterize as distinct. With the foliage of *A. indicum*, they are said to be shrubby; in one, the tomentum is close and white without spreading hairs as in *A. indicum*, the other, with the same tomentum, has also long spreading hairs as in *A. graveolens* and *A. subviscosum*. The flowers and fruit in both are very near those of *A. indicum*, but smaller, and the carpels fewer (about 10) and less hirsute. They are both from Victoria river.

10. **A. indicum,** *G. Don, Gen. Syst.* i. 504. A tall biennial or peren-

nial, clothed with a whitish tomentum, usually very close and short. Leaves cordate-orbicular, irregularly crenate, toothed or almost lobed, usually acuminate, attaining sometimes 5 to 6 in., the upper ones much smaller. Pedicels shorter than the leaves. Calyx campanulate, 5 to 6 lines long, angular in the bud, the ribs scarcely prominent when in flower, deeply divided into acuminate lobes. Petals yellow, longer than the calyx. Capsule hairy, exceeding the calyx, truncate, and attaining sometimes 7 or 8 lines diameter at the top; carpels about 20, acute-angled or minutely acuminate at their upper outer edge, like all the preceding species not readily separating at maturity. Seeds 3 or fewer in each carpel.—*Sida indica*, Linn.; DC. Prod. i. 471; Wight, Ic. Pl. t. 12; *Sida asiatica*, Linn.; DC. Prod. i. 470; *Abutilon asiaticum*, G. Don, Gen. Syst. i. 503.

N. Australia. Point Cunningham and Cygnet Bay, *A. Cunningham;* Gulf of Carpentaria, *Landsborough*.

Queensland. Keppel Bay and Shoalwater Bay, *R. Brown;* Percy Island, *A. Cunningham;* Port Denison, *Fitzalan*.

The species is widely spread over tropical Asia and Africa.

11. **A. auritum,** *G. Don, Gen. Syst.* i. 500. A tall herb or perhaps undershrub, softly clothed with a soft tomentum. Stipules broad, semi-sagittate, often 4 to 6 lines long, and persistent. Leaves deeply cordate, acuminate, denticulate, 2 to 4 in. long, softly pubescent-tomentose above, white underneath. Flowers rather small, of a brown-reddish yellow, on very short pedicels, in almost leafless, terminal, branching racemes or panicles, with a broad, whitish, deciduous, stipular bract under each pedicel. Calyx obtusely 5-angled, softly tomentose, deeply divided into broad acuminate lobes. Petals not twice as long. Stamens not very numerous. Capsule longer than the calyx, hirsute, truncate; carpels numerous, with short divaricate points.—*Sida aurita*, Wall.; DC. Prod. i. 468; Bot. Mag. t. 2495.

N. Australia. Keppel Bay, *R. Brown;* Percy Island, *A. Cunningham*.

The species is also found in Java and in the Philippine Islands.

12. **A. Avicennæ,** *Gærtn. Carp.* ii. 251, *t.* 135. A coarse, erect, branching annual, from 1 to 2 ft. high, softly and more or less densely tomentose-pubescent, without spreading hairs. Leaves broadly orbicular-cordate, acuminate, often 3 to 4 in. long, nearly entire or toothed, or obscurely lobed. Flowers yellow, rather small, on pedicels usually short. Calyx about 3 lines long, somewhat longer when in fruit, rather prominently 5-ribbed, deeply lobed. Petals exceeding the calyx. Capsule exceeding the calyx, pubescent or hirsute, truncate, and often ¾ in. diameter at the top; carpels usually 10 to 15, with subulate diverging points, persistent till after the seeds are fallen, and then leaving at least the filiform placentas attached to the axis.—*Sida Abutilon*, Linn.; DC. Prod. i. 470; F. Muell. Pl. Vict. i. 164; *Abutilon Behrianum*, F. Muell. in Trans. Phil. Soc. Vict. 1855, 13, and in Hook. Kew Journ. viii. 10.

N. S. Wales. On the Darling and many of its tributaries, *F. Mueller.*

Victoria. Dry beds of lagoons adjoining the Murray, *F. Mueller*.

S. Australia. Cooper's Creek, *Wright*.

A native of the Mediterranean region and of the neighbouring districts of Asia, also perhaps of northern China and Amur-land, where it is said to be cultivated for textile purposes. It has also naturalized itself as a weed over many parts of Asia, Africa and N. America, and includes *A. californicum*, Benth., and *Sida tiliæfolia*, Fisch. The Australian plant is believed to be indigenous.

13. **A. graveolens,** *W. and Arn. Prod. Fl. Pen. Ind. Or.* i. 56. A coarse annual or perhaps perennial, from 1 to 5 ft. high, clothed with a viscid strong-scented tomentum, intermixed, especially on the branches and petioles, with long spreading hairs. Leaves broadly orbicular-cordate, resembling those of *A. Avicennæ*, but softer. Flowers yellow, rather large, on pedicels about as long as the petioles. Calyx about 5 lines long, deeply divided into acuminate lobes, each with a prominent midrib. Petals twice as long. Capsule exceeding the calyx, 8 to 10 lines diameter, hirsute, contracted at the top so as to approach in form that of *A. muticum*, and the carpels are numerous and closely packed as in that species, but angular or very shortly pointed at the top and less deciduous, generally leaving the filiform placentas attached to the axis, the species thus connecting the true *Abutila* with the section *Gayoides*.—Hook. Comp. Bot. Mag. i. t. 2; *Sida graveolens*, Roxb.; DC. Prod. i. 473.

Queensland. Piper's Island, off the N.E. coast, *M'Gillivray.*

The species is widely spread over East India and tropical Africa. The petals have there usually a dark spot at the base which does not appear in our Australian specimens.

14. **A. oxycarpum,** *F. Muell. Herb.* Herbaceous, diffuse or erect, attaining 2 or 3 ft., clothed with a close tomentum or soft velvety pubescence, sometimes almost hirsute, the branches usually slender and divaricate. Leaves from cordate-ovate to ovate-lanceolate, crenate, obtuse or acuminate, 1 to 3 in. long. Pedicels slender, often 2 together, 1 to 2 in. long. Flowers small, yellow. Calyx deeply cleft, about 2 lines long. Petals not twice as long. Capsule closely tomentose or pubescent, about 4 lines long, truncate and somewhat dilated at the top; carpels rarely above 10 and often much fewer, with short divaricate points at the outer angle, not separating till the seeds shed, and then leaving the filiform placentas attached to the axis. Seeds 2 or rarely 3.—*Sida oxycarpa*, F. Muell. Fragm. ii. 12.

N. Australia. Fitzroy and Mackenzie rivers, *F. Mueller.*

Queensland. Keppel Bay, *R. Brown*; Brisbane river, *Fraser*, *F. Mueller*; Rockhampton, *Thozet.*

N. S. Wales. Portland Head and Richmond district, *R. Brown*; from Hastings river, *Beckler*; Clarence river, *Wilcox*; to Illawara, *Backhouse*; and in the interior to the Blue Mountains, *Miss Atkinson*; Liverpool plains, *A. Cunningham*; Macquarie river, *Mitchell*; Darling river, *F. Mueller.*

W. Australia. Swan River, *Drummond.*

There are two principal forms in our herbaria: 1, *acutatum*, softly tomentose, pubescent or almost hirsute; leaves ovate-lanceolate, or lanceolate, acuminate; the most common Brisbane and N. S. Wales form; and 2, *incanum*, tomentum close and white; leaves broadly cordate-ovate, obtuse or acuminate; chiefly within the tropics and in the west. Both are readily recognized by the small calyx, usually not half so long as the capsule.

Var. (?) *malvæfolium.* Less tomentose, but hirsute with long spreading hairs. Leaves cordate-ovate, very obtuse, crenate, and more or less distinctly 3-lobed. Sepals almost as long as the carpels.—Mount Murchison in N. S. Wales, *Dallachy.* This may prove to be a distinct species.

15. **A. muticum,** *G. Don, Gen. Syst.* i. 502. Tall and erect, with the habit of *A. graveolens*, with which it is often confounded, but differs in the fruit. Tomentum dense and soft, but not usually mixed with spreading

hairs. Leaves cordate-orbicular, often acuminate and irregularly toothed, 2 to 3 in. diameter, thick and soft. Pedicels rarely exceeding the petioles. Calyx ½ in. long, the lobes equal to or longer than the tube, the ribs not very prominent. Petals not twice as long, often with a dark base as in *A. graveolens*. Capsule longer than the calyx, depressed-globular with a concave centre, 7 to 8 lines diameter, densely villous; carpels about 20, closely packed, rounded or very obtuse at the top, and separating completely without leaving the persistent placentæ of *A. graveolens*.—*Sida mutica*, Delil.; DC. Prod. i. 470.

Queensland. Keppel Bay, *R. Brown*; Percy Island, *A. Cunningham*; Sources of the Burdekin and on the Dawson, *F. Mueller*; Rockhampton, *Thozet*.

The specimens are not complete, but agree well with those from tropical Africa, where the species is common, and generally referred to *A. asiaticum*, but is not *Sida asiatica* of Linnæus. *S. tomentosa*, Roxb., appears to be an E. Indian form of the same species, with the tomentum mixed with spreading hairs as in *A. graveolens*, from which it cannot always be distinguished without good fruit. It is this form which is represented as *Sida graveolens*, Bot. Mag. t. 4134.

16. **A. Cunninghamii,** *Benth.* Allied to *A. Fraseri*, but apparently shrubby, much branched, and densely clothed with soft, short, but velvety tomentum, without spreading hairs. Leaves cordate-orbicular, very obtuse, crenate, 1 to 2 in. diameter, thick and soft. Flowers on rather long peduncles in the upper axils. Calyx 4 to 5 lines long, densely tomentose, deeply divided into broad acuminate lobes. Petals about ½ in. long. Carpels 10 or fewer, distinct and seceding completely from the axis, rounded at the top, densely but closely tomentose, and not scarious.

N. Australia. Enderby Island, N.W. coast, *A. Cunningham*; Albert river, *Henne*.
Queensland. Estuary of the Burdekin, *Herb. Mueller.*

17. **A. Fraseri,** *Hook.*; *Walp. Ann.* ii. 158. A low branching undershrub, rarely exceeding 1 ft., shortly tomentose or pubescent, with longer hairs occasionally intermixed. Leaves cordate, from orbicular to ovate, crenate, often all under 1 in. diameter, but sometimes 1½ in. Pedicels rarely exceeding the petioles. Flowers rather large. Calyx 3 to 4 lines long, tomentose-pubescent and sometimes hirsute, divided to about the middle. Petals more than twice as long. Fruit usually exceeding the calyx, slightly tomentose or pubescent, 3 to 4 lines diameter, depressed in the centre; carpels 6 to 10, very distinct, and seceding completely from the axis, obtuse or almost pointed at the top, not scarious. Seeds 1 or 2 in each carpel, glabrous or minutely pubescent.—*Sida Fraseri*, Hook. in Mitch. Trop. Austr. 368.

N. Australia. *M'Douall Stuart's Expedition.*

Queensland. On the Maranoa, *Mitchell*; Sutton river and Broad Sound, *F. Mueller*; Comet river, *Leichhardt*.

N. S. Wales. Peel's range, *A. Cunningham*; Darling river, *Dallachy and Goodwin*; Goginya mountains, *Victorian Expedition.*

S. Australia. Subsaline barren plains and hills from Flinders range to Spencer's Gulf, *F. Mueller.*

W. Australia. Murchison river ?, from a single specimen in leaf only, and therefore doubtful, in *Herb. Mueller.*

Var. *parviflora*. Leaves very obtuse. Flowers much smaller.—*A. diplotrichum*, F. Muell. in Linnæa, xxv. 380.—S. Australia.

Var. *halophilum*. Leaves usually orbicular, very obtuse, often truncate or retuse, the carpels 5 or 6 lines long, and very broad and obtuse.—*A. halophilum*, F. Muell. in Linnæa xxv. 381.—N. S. Wales, S. Australia, and W. Australia?

18. **A. crispum,** *G. Don, Gen. Syst.* i. 502. A herb or undershrub with slender spreading branches, closely tomentose, often viscid, with long spreading hairs intermixed. Leaves cordate, acuminate, crenate, softly tomentose, the upper ones on short petioles or quite sessile. Pedicels slender often exceeding the upper leaves. Flowers small, yellow. Calyx 2 or rarely 3 lines long, deeply divided into lanceolate or triangular acuminate lobes, reflexed under the fruit. Petals not much longer. Fruit nearly globular, hispid with scattered hairs, 4, 5, or sometimes above 6 lines diameter; carpels about 10 to 15, distinctly separating from the axis, very thin, shining inside and almost scarious when ripe, and almost always 1-seeded, although the ovary has 2 or 3 ovules.—A. Gray, Gen. Ill. t. 126; Wight, Ic. Pl. t. 68; *Sida crispa*, Linn.; DC. Prod. i. 469; *Bastardia crispa*, St. Hil. Fl. Bras. Mer. i. 194.

N. Australia. Sources of Hooker's Creek, and Macarthur river, *F. Mueller*; Maitland river, *F. Gregory's Expedition.*

The species is widely spread over tropical America, and is also found in East India and tropical Africa.

7. URENA, Linn.

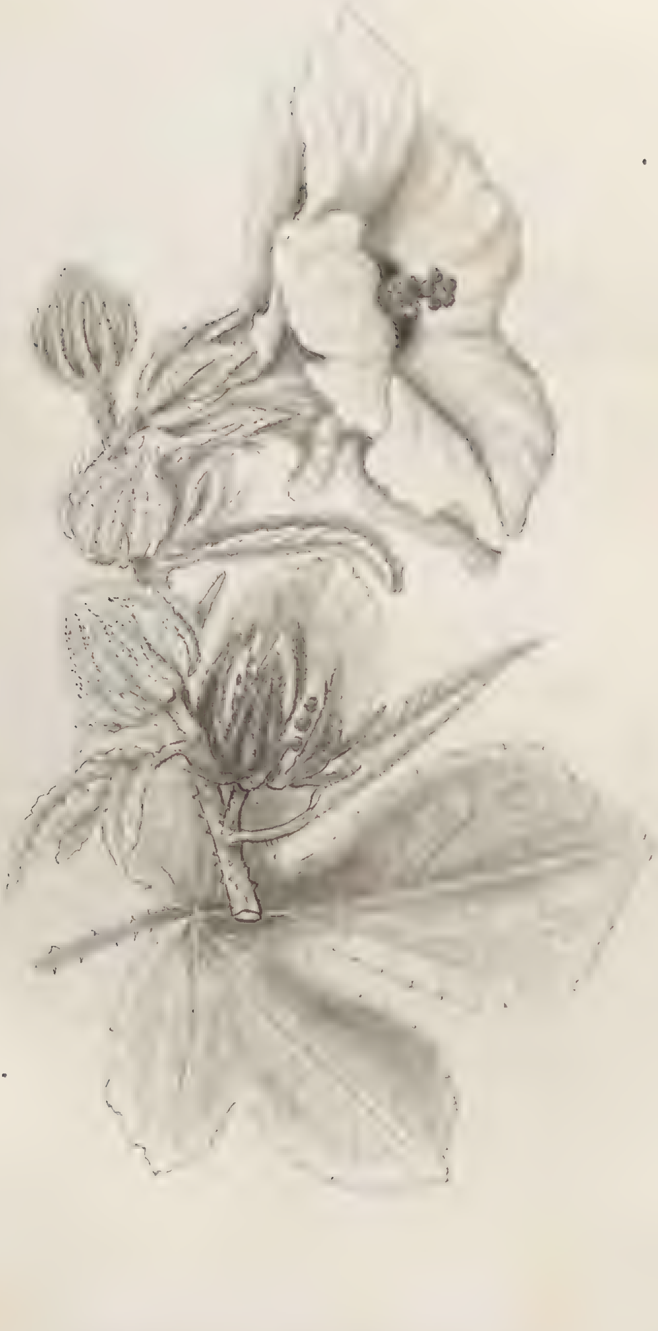
Bracteoles 5, united in a 5-cleft involucre, adnate to the calyx at the base. Calyx 5-toothed or 5-lobed. Staminal column bearing several filaments or almost sessile anthers outside, below the truncate or 5-toothed summit. Ovary-cells 5, 1-ovulate; style branches 10, with terminal capitate stigmas. Fruit-carpels seceding from the axis, indehiscent, muricate or covered with hooked bristles. Seeds ascending. Rigid tall herbs or shrubs, more or less scabrous-tomentose. Leaves usually angled or lobed, at least the lower ones. Flowers sessile or on very short peduncles, often clustered, axillary or in terminal leafy racemes.

Besides the one or two species common in all tropical regions, the genus comprises two or three tropical Asiatic ones which appear distinct. As a genus, *Urena* scarcely differs from *Pavonia.*

1. **U. lobata,** *Linn.; DC. Prod.* i. 441, var. *grandiflora.* A hard, erect herb or shrub of 2 to 4 ft., covered on the stems and under side of the leaves with a whitish close often scabrous tomentum. Leaves petiolate, the lower ones nearly orbicular, the upper ones ovate or lanceolate, palmately 3- to 7-veined, irregularly toothed, angular, or broadly and shortly lobed, glabrous above or slightly scabrous-tomentose. Flowers sessile or nearly so. Involucre deeply cleft into narrow-lanceolate lobes, in the single Australian specimen nearly ½ in. long, and fully twice as long as the calyx, but often not longer than the calyx or shorter. Petals pink, about 1 in. long in this specimen, but often much smaller. Carpels in our specimen shortly muricate.—Bot. Mag. t. 3043 (with short involucres).

Queensland. Sutton and Burdekin rivers, *Leichhardt.*

The species is widely spread over tropical America, Africa, and Asia, and is very variable in the shape of the leaf and proportions of the involucre, calyx, and petals, as well as in the carpels, more or less glochidiate or muricate; and most probably the *U. sinuata*, Linn., almost equally common, is only a variety with deeply-cut leaves.



8. PAVONIA, Cav.

(Greevesia, *F. Muell.*)

Bracteoles 5 or more, free or united at the base. Calyx 5-toothed or 5-lobed. Staminal column bearing several filaments on the outside, below the truncate or 5-toothed summit. Ovary-cells 5, 1-ovulate; style-branches 10, with terminal capitate stigmas. Fruit-carpels seceding from the axis, indehiscent or 2-valved at the top, with or without 1 or 3 awns or points, but not covered by the hooked bristles of *Urena*. Seeds ascending.—Herbs or shrubs, tomentose, hirsute, or glabrous. Leaves often angled or lobed. Flowers on axillary pedicels or in terminal heads or clusters.

A large genus, chiefly South American, with a few species scattered over the warmer regions of the Old World. The Australian species is the same as one of the South American ones.

1. **P. hastata,** *Cav. Diss.* 138, *t.* 47, *f.* 2. A low spreading shrub, more or less hoary, with a minute close stellate tomentum. Stipules subulate. Leaves petiolate, from ovate-cordate to oblong-hastate, obtuse, 1 to 2 in. long, coarsely crenate, scabrous above, hoary-tomentose underneath; when hastate, the lateral lobes short and obtuse. Pedicels usually shorter than the leaves. Bracteoles 5, ovate, herbaceous, nearly as long as the calyx. Calyx tomentose, 2 to 3 lines long, divided to the middle into 5 ovate lobes. Petals in the perfect flowers twice as long as the calyx, of a reddish-purple with a dark centre, but in other flowers, equally fertile, they are very small and closed over the stamens, which are then reduced to 5, whilst they are much more numerous in the perfect flowers. Carpels obovoid, indehiscent, usually pubescent, strongly reticulate and with a slightly raised dorsal rib.—DC. Prod. i. 443; Reichb. Icon. Exot. t. 227; *Greevesia cleisocalyx*, F. Muell. in Kew Journ. viii. 8 (founded on clandestine-flowered specimens).

Queensland. Moreton Bay, *F. Mueller*; Brisbane river, *Hill*; Expedition Range, *Leichhardt*.

N. S. Wales. Nepean, Hawkesbury and Patterson rivers, *R. Brown*; Hunter's river, *U. S. Exploring Expedition*; Liverpool Plains, *A. Cunningham*; Clarence river, *Beckler*.

Also a native of Montevideo in South America, where, as well as in Australia, it produces both kinds of flowers, although the clandestine ones appear never to have been observed until pointed out by F. Mueller.

9. HIBISCUS, Linn.

(Abelmoschus, *Medik.*; Paritium, *A. St. Hil.*)

Bracteoles several, rarely reduced to 5 or fewer, usually narrow, free or more or less united, sometimes very small. Calyx 5-lobed or 5-toothed. Staminal column bearing usually numerous filaments on the outside below the truncate or 5-toothed summit. Ovary 5-celled, with 3 or more ovules in each cell; style-branches 5, spreading, or rarely erect and subconnate or exceedingly short, with terminal dilated or capitate stigmas. Capsule membranous or coriaceous, loculicidally 5-valved, the endocarp not usually separating, and rarely produced into spurious dissepiments apparently doubling the number of cells. Seeds reniform or nearly globular, glabrous pubescent or woolly.—Herbs, shrubs, or trees, hispid tomentose or glabrous, the hairs almost always stellate. Leaves various, often deeply divided. Stipules in the Australian species subulate or small and deciduous, except in *H. tiliaceus*.

Flowers usually large, the petals almost always marked with a deeper colour at the base. Filaments usually short and numerous, crowded along the greater part of the elongated staminal column, rarely elongated, fewer and placed close round the top of the short column. Bracteoles usually persistent, but in a few species so deciduous as only to be seen on the very young buds.

A very large genus, widely dispersed over the tropical regions of the globe, a few extending into more temperate climates both in the northern and southern hemispheres. Of the Australian species four are generally distributed over E. India and Africa; of three others belonging to the section *Abelmoschus*, one is found in the Indian Peninsula, another is cultivated, if not wild, in the Indian Archipelago, the third is nearly allied to a corresponding E. Indian species, but in some respects distinct, an eighth species, of the section *Paritium*, is a common maritime tropical tree; the remaining 18 are all endemic.

§ 1. *Bracteoles free (sometimes very deciduous). Calyx 5-toothed, splitting open on one side and deciduous. Tall annuals.* (Abelmoschus, *Medik.*)

Glabrous or the inflorescence tomentose. Bracteoles small, falling off from the young bud. Flowers white . . . . 1. *H. ficulneus.*
Hispid. Bracteoles 8- to 12, linear, persistent. Flowers red . 2. *H. rhodopetalus.*
Glabrous or slightly setose. Bracteoles 5, broad-lanceolate, persistent . . . . 3. *H. Manihot.*

§ 2. *Bracteoles free. Calyx shortly 5-lobed, inflated. Herb with deeply lobed leaves.* (Trionum, *Medik.*) . . . . 4. *H. trionum.*

§ 3. *Bracteoles free. Calyx deeply 5-lobed, the lobes 1- or 3-nerved, without thickened margins. Seeds bordered or covered by long woolly hairs. Low or slender shrubs or undershrubs.* (Bombicella, *DC.*)

Staminal tube short with long filaments round the summit . . 5. *H. brachysiphonius.*
Staminal tube slender, the short filaments extending to the middle or lower.
  Plant loosely scabrous-hispid. Leaves deeply divided . . . 6. *H. Drummondii.*
  Plant densely and rigidly velvety-tomentose. Leaves ovate or lanceolate, mostly undivided. Bracteoles small . . . . 7. *H. microchlænus.*
  Plant closely and densely tomentose. Leaves orbicular, mostly broadly 3-lobed . . . . 8. *H. Pinonianus.*

§ 4. *Bracteoles free. Calyx deeply 5-lobed, the lobes with a central nerve and thickened nerve-like margins. Seeds glabrous. Tall herbs or shrubs, often more or less armed with short prickles (except the last two species).*

Herb, glabrous or with scattered hairs. Calyx ribs ciliate. Flowers white or pink . . . . 9. *H. radiatus.*
Tall shrubs, glabrous or with scattered hairs.
  Flowers axillary, without bracts under the pedicels.
    Flowers yellow. Calyx ciliate or setose . . . . 10. *H. divaricatus.*
    Flowers white. Calyx densely tomentose . . . . 11. *H. heterophyllus.*
  Flowers in a terminal raceme, with a trifid bract under each pedicel. Calyx densely hirsute . . . . 12. *H. diversifolius.*
Tall shrub, densely velvety-tomentose or villous. Flowers large, pink. Calyx densely hirsute . . . . 13. *H. splendens.*
Tomentose or densely villous shrubs, without prickles. Calyx tomentose or villous.
  Flowers 1½ to 2 in. long . . . . 14. *H. zonatus.*
  Flowers about ¾ in. long . . . . 15. *H. Coatesii.*

§ 5. *Bracteoles free. Calyx deeply 5-lobed, the lobes 1- or 3-nerved, without thickened margins. Seeds glabrous or shortly pubescent.*

Low or slender shrubs or undershrubs, glabrous, scabrous-pubescent or bristly hispid.
  Leaves undivided.
    Scabrous pubescent. Leaves ovate-lanceolate or oblong . . 16. *H. leptocladus.*

Glandular viscid and rigidly setose. Leaves broad-cordate or orbicular . . . . 17. *H. setulosus.*
Leaves deeply divided.
Glabrous or nearly so. Calyx ¾ in. long. Capsule hispid . 18. *H. pentaphyllus.*
Hirsute and densely setose. Calyx not ½ in. Capsule glabrous . . . . 19. *H. geranioides.*
Small velvety-tomentose shrubs or undershrubs. Leaves shortly lobed.
Bracteoles several, subulate . . . . 23. *H. Krichauffianus.*
(See also 8, *H. Pinonianus,* and 7, *H. microchlænus.*)
Bracteoles 5, broadly ovate . . . . 22. *H. Normani.*
Tall shrub, scabrous, tomentose or hirsute. Leaves deeply divided 25. *H. Huegelii.*
Tall coarse herbs or shrubs, densely tomentose and often setose.
Bracteoles small, subulate. Capsule very prominently angled . 20. *H. vitifolius.*
Bracteoles dilated above the middle. Capsule not angled . . 21. *H. panduriformis.*

§ 6. *Bracteoles united at least at the base. Calyx* 5-*lobed.*

Tomentose shrubs or undershrubs. Leaves crenate or broadly and shortly lobed.
Involucral teeth or lobes short or broad. Filaments long and few. Calyx lobes obscurely nerved . . . . 24. *H. Sturtii.*
Involucral bracts united at the base only. Filaments short and numerous. Calyx lobes 1-nerved, with thickened margins . 14. *H. zonatus.*
Tall shrub, glabrous, scabrous or tomentose-hirsute. Leaves deeply divided . . . . 25. *H. Huegelii.*
Glabrous tree. Leaves broad-cordate, entire . . . . 26. *H. tiliaceus.*

1. **H. ficulneus,** *Linn.; DC. Prod.* i. 448. An erect annual of several feet, glabrous except a few scattered hairs on the leaves, and a velvety pubescence on the racemes and calyces. Leaves orbicular, 2 to 3 in. diameter, the lower ones with 5 or 7 short broad lobes, the upper ones more deeply divided, with obovate or oblong lobes, all usually crenate. Flowers white, turning at length reddish, on short pedicels, in a terminal leafless raceme. Bracteoles few, small and so deciduous as only to be seen on the very young buds. Calyx about ½ in. long, shortly 5-toothed, splitting laterally and deciduous. Petals 1 in. or rather more, glabrous. Capsule ovoid-oblong, acute, 5-angled, pubescent. Seeds hairy.—*Abelmoschus ficulneus,* W. et Arn. Prod. i. 53; Wight, Ic. t. 154; *A. alborubens,* F. Muell. Fragm. i. 67.

N. Australia. In basaltic tropical and subtropical plains, *F. Mueller.*

Queensland. Fitzroy plains, *F. Mueller;* Rockhampton, *Thozet.*

The species is common in some parts of the E. Indian peninsula, and includes *H. strictus,* Roxb. Fl. Ind. iii. 206, and probably also *H. prostratus,* Roxb. l. c. 208. The plant figured by Reichenbach, Icon. Exot. t. 161, with persistent broad bracts, is a different species.

2. **H. rhodopetalus,** *F. Muell. Herb.* An erect or decumbent coarse annual, of 1½ to 3 ft., more or less hirsute with long bristly hairs. Leaves (except the lowest) more or less deeply 5-lobed, the lobes of the lower ones short and broad, of the upper ones oblong or lanceolate, often 2 to 3 in. long, more or less toothed, the lowest leaves often entire and cordate, and the uppermost lanceolate-hastate. Flowers large, red, on axillary pedicels longer than the petioles. Bracteoles 8 to 12, linear, distinct, persistent, usually shorter than the calyx. Calyx pubescent, 6 to 7 lines long, minutely 5-toothed, splitting laterally and deciduous. Petals 1½ to above 2 in. long.

Capsule oblong-ovoid, acute, 5-angled, longer than the bracteoles, very hispid. —*Abelmoschus rhodopetalus*, F. Muell. Fragm. ii. 112.

N. Australia. Arnhem's Land, *R. Brown*; Port Molle, *M'Gillivray* (with very narrow leaf-lobes).

Queensland. Woody streams, Point Pearce and Brisbane river, *F. Mueller.*

This species is very nearly allied to the common East Indian *H. Abelmoschus*, Linn., differing chiefly, as observed by F. Mueller, in the colour of the flowers, red not yellow, and in smaller, more divided leaves.

3. **H. Manihot,** *Linn.; DC. Prod.* i. 448. A tall herb, sprinkled with a few pungent bristly hairs, more copious on the peduncles, otherwise glabrous. Leaves deeply palmate; lobes 5 to 9, lanceolate, the larger ones narrow, 4 to 5 in. long, more or less toothed. Flowers large, yellow with a purple eye, on rather long pedicels in the axils of the upper reduced leaves. Bracteoles 5, herbaceous, broadly lanceolate, fully 1 in. long, roughly pubescent, persistent long after the flower has fallen. Calyx shorter than the bracteoles, shortly 5-toothed, tomentose, deciduous. Petals fully 2½ in. long. Capsule oblong, 1½ to 2 in. long, 5-angled, hispid especially on the angles with stiff bristly hairs.—Bot. Mag. t. 3152; *Abelmoschus Manihot*, Walp. Rep. i. 311; *Hibiscus pentaphyllus*, Roxb. Fl. Ind. iii. 212.

Queensland. Shoalwater Bay, *R. Brown.* The species is frequently cultivated in eastern tropical Asia, and in the islands of the Archipelago and the Pacific, but we have no certain record of it in a wild state.

4. **H. trionum,** *Linn.; DC. Prod.* i. 453. An erect annual or perennial of short duration, usually 1 to 2 ft. high, scabrous-pubescent or shortly hirsute. Leaves 2 to 3 in. long, deeply 3- or 5-lobed with oblong or lanceolate irregularly-toothed lobes. Flowers rather large, pale-yellow with a dark purple centre, on axillary pedicels. Bracteoles 7 to 12, linear-setaceous. Calyx about ½ in. long when in flower, twice that size in fruit, inflated, membranous with about 20 raised veins, glabrous or slightly hirsute, very shortly 5-lobed. Capsule ovoid-globose, hirsute, enclosed in the calyx. Seeds glabrous.—Reichb. Fl. Germ. v. 181; F. Muell. Fragm. ii. 115; *H. Richardsoni*, Sweet; Lindl. Bot. Reg. t. 875; *H. trionioides*, G. Don, Gen. Syst. i. 483; *H. tridactylites*, Lindl. in Mitch. Three Exped. i. 85.

N. Australia. Victoria river and Sturt's Creek, *F. Mueller.*

Queensland. Between the Burnett and Dawson rivers, *F. Mueller.*

N. S. Wales. Hunter's and Nepean rivers, *R. Brown*; Clarence and Hastings rivers, *Beckler*; Darling river, *Dallachy and Goodwin.*

S. Australia. Cooper's Creek, *Herb. F. Mueller.*

Common throughout Africa and southern Asia, extending northwards to China and the Amur. Found also in New Zealand.

5. **H. brachysiphonius,** *F. Muell. Fragm.* i. 67 and 243. A low perennial or undershrub, with erect or decumbent stems, rarely above 1 ft. long, slightly hirsute with short stiff stellate hairs. Lower leaves small, orbicular, undivided, crenate; upper ones divided into 3 obovate or oblong-cuneate coarsely crenate or lobed segments or deep lobes, mostly 1 to 1½ in. long. Flowers rather small, pink, on axillary or terminal pedicels, sometimes very long. Bracteoles about 10, rather rigid, linear, shorter than the calyx. Calyx ciliate with a few stiff hairs, deeply divided into lanceolate 1-nerved lobes, not thickened at the margin. Petals about ½ in. long. Sta-

minal column short, bearing round the summit about 20 filaments much longer than in most species. Style-branches long, with large capitate stigmas. Capsule nearly globular, glabrous, 4 to 6 lines diameter. Seeds 4 to 6 in each cell, tomentose-villous.

Queensland. Mooni river, *Mitchell;* Peak Downs, *F. Mueller;* Comet river, *Leichhardt.*

N. S. Wales. Macquarie river, *Mitchell;* on the Murray, *F. Mueller;* Darling river, *Dallachy and Goodwin;* Goyinga mountains, *Victorian Expedition.*

6. **H. Drummondii,** *Turcz. in Bull. Mosc.* 1858, i. 195. A slender branching shrub or undershrub, scabrous or hispid with short rigid stellate hairs. Leaves mostly divided into 3, rarely 5, cuneate, oblong-linear or rarely obovate segments, coarsely toothed or lobed, and usually hispid underneath, rarely much exceeding 1 in., the lower leaves smaller, broader, and more entire. Flowers few in the upper axils, rather large, purple with a dark centre. Bracteoles 8 to 10, linear, hispid, often as long as the calyx. Calyx $\frac{3}{4}$ to 1 in. long, very hirsute, deeply divided into lanceolate, acuminate, 3-nerved lobes, the lateral nerves not marginal. Capsule ovoid, acute, hispid. Seeds numerous, ciliate or covered with long woolly hairs when quite ripe.—*H. Elliottii,* F. Muell. Fragm. i. 220.

W. Australia, *Drummond, n.* 90; between Moore and Murchison rivers, *Drummond, 5th Coll. n.* 101; Murchison and Greenough rivers, *Walcott and Oldfield.*

7. **H. microchlænus,** *F. Muell. Fragm.* ii. 116 (under *H. solanifolius*). Apparently shrubby, densely clothed with a scabrous, rigid-velvety, or softer and almost floccose stellate tomentum. Leaves on rather short petioles, from ovate to oblong-lanceolate, 1 to $1\frac{1}{2}$ in. long, obtuse, slightly toothed, thickly and rigidly tomentose. Flowers apparently pink or purple, on pedicels rather longer than the petioles. Bracteoles 7 to 9, sometimes very minute, sometimes half as long as the calyx. Calyx $\frac{1}{2}$ in. or rather more, densely scabrous-tomentose, deeply divided into lanceolate 1-nerved lobes. Petals 1 to $1\frac{1}{2}$ in. long, more or less stellate-tomentose outside where exposed in the bud. Capsule globular, glabrous or slightly hairy. Seeds more or less bordered or covered with long woolly hairs.—*H. brachychlænus,* F. Muell. Fragm. iii. 5.

N. Australia. Upper Victoria river, *F. Mueller;* Maitland river, Nichol Bay, *Walcott;* Fortescue river, *M. Brown.*

8. **H. Pinonianus,** *Gaudich. in Freyc. Voy. Bot.* 476, *t.* 100. Shrubby, clothed with a close, short, soft, or scarcely scabrous tomentum. Leaves on rather long petioles, mostly nearly orbicular, $\frac{1}{2}$ to above 1 in. long and broad, shortly and broadly 3-lobed, crenately toothed, undulate and often crisped on the margin, strongly reticulate underneath, the lower ones almost entire. Flowers rather large, on short pedicels in the upper axils. Bracteoles 5 to 10, linear, short. Calyx 6 to 8 lines long, tomentose, deeply divided into lanceolate 3- or 5-nerved lobes. Petals $1\frac{1}{2}$ to near 2 in. long, softly tomentose outside where exposed in the bud. Style-branches filiform, with large, often penicillate stigmas, connivent at first, then spreading, and often closing again when withering, so as to give the style a simple clavate appearance. Capsule tomentose outside, glabrous inside. Seeds covered with long woolly hairs.—*H. solanifolius,* F. Muell. Fragm. ii. 116.

N. Australia. Mount Denison, *M'Douall Stuart.*

W. Australia. Sharks Bay, *Gaudichaud;* between Moore and Murchison rivers, *Drummond, 5th Coll. n.* 104. The flowers in Gaudichaud's specimens are larger than in the others.

9. **H. radiatus,** *Cav. Diss.* 150, *t.* 54, *f.* 2. An erect annual (or rarely perhaps perennial) of 2 to 3 ft., glabrous or hispid in the lower part with a few rigid hairs, and often bearing also small conical prickles. Lower leaves broad and shortly lobed, upper ones deeply 3- to 5-lobed or the uppermost undivided, the lobes narrow, toothed and unequal, the central one often 2 to 3 in. long. Flowers white or pink with a dark centre, on axillary pedicels usually very short, rarely attaining 1 in. Bracteoles about 10, narrow-linear, often spreading or reflexed, and ciliate with a few rigid hairs. Calyx about ¾ in. long, deeply divided into lanceolate acuminate lobes, of a thin texture, but marked with a prominent midrib and thickened marginal nerves, more or less rigidly ciliate. Petals 1 to 1½ in. long. Capsule globose, glabrous in the Australian specimens. Seeds few, glabrous.—DC. Prod. i. 449; Bot. Mag. t. 1911; F. Muell. Fragm. ii. 117.

N. Australia. Arnhem's Land, islands of Carpentaria Bay, etc., *R. Brown;* Victoria and Fitzmaurice rivers, Macadam range, etc., *F. Mueller.*

Queensland. Percy Islands and other points of the N.E. coast, *A. Cunningham;* Palm Islands and Curtis Island, *Henne.*

The species extends over E. India and tropical Africa, but the extra-Australian specimens I have seen have always hirsute and less obtuse capsules. *H. Lindleyi,* Wall. Pl. As. Rar. i. 4, t. 4, is probably a purple-flowered variety. *H. cannabinus,* Linn., cultivated in Asia and Africa for its fibre, differs from *H. radiatus* only in the glands on the calyx.

10. **H. divaricatus,** *Grah. in Edinb. Phil. Journ. Jul.–Oct.* 1830. A tall, erect, glabrous shrub, with the foliage of some varieties of *H. heterophyllus* and the flowers of *H. radiatus,* the branches often beset with small conical prickles. Leaves on short petioles, entire or deeply 3-lobed, from round-cordate to ovate-lanceolate or oblong, often fully 4 in. long, more or less toothed. Flowers large, yellow with a crimson eye, on short pedicels in the axils of the upper reduced leaves. Bracteoles 10 to 12, linear, rigid, ciliate. Calyx deeply divided into lanceolate lobes, with prominent midribs and margins as in *H. radiatus,* rigidly ciliate or rarely minutely tomentose. Petals 2 to 2½ in. long. Capsule ovoid-globose, densely silky-hairy.—*Abelmoschus divaricatus,* Walp. Rep. i. 309; *Hibiscus magnificus,* F. Muell. Fragm. ii. 118.

Queensland. Shoalwater Bay, *R. Brown;* N.E. coast, *A. Cunningham;* Newcastle range, Mackenzie and Dawson rivers, *F. Mueller.*

One of F. Mueller's specimens, with the calyx not ciliate but minutely tomentose, seems to connect this species with some forms of *H. heterophyllus.*

11. **H. heterophyllus,** *Vent. Hort. Malm. t.* 103. A tall shrub, glabrous, except a stellate tomentum on the inflorescence and very young shoots, the branches often bearing small conical prickles. Leaves entire or deeply 3-lobed, linear, lanceolate or elliptical-oblong, often 5 to 6 in. long, usually serrulate or crenulate, in some specimens white underneath. Flowers large, white with a purple centre, on short pedicels in the upper axils. Bracteoles about 10, linear, rigid, not ciliate. Calyx often above 1 in. long, deeply divided into lanceolate lobes, densely covered with a stellate tomentum often

concealing the venation, which, as in *H. radiatus*, consists of a midrib and the thickened margins of each lobe. Petals nearly 3 in. long. Capsule ovoid-globular, acute, densely setose or silky-hairy. Seeds glabrous.—Bot. Reg. t. 29; DC. Prod. i. 450; *H. grandiflorus*, Salisb. Par. Lond. t. 22.

Queensland. Broad Sound, Shoalwater Bay, *R. Brown*; Percy Isle and Port Curtis, *M'Gillivray*; Brisbane river, *Fraser*, *A. Cunningham*, *F. Mueller*, etc.; Rockhampton, *Thozet*.

N. S. Wales. Macleay and Hastings river, *Beckler*; Hawkesbury river, *Paterson*; Kiama, *Harvey*: Port Stephens, *Lady Parry*; Port Macquarie, *Thozet*.

The northern specimens belong mostly to a broader-leaved form, distinguished by A. Cunningham under the name of *H. Margeriæ*.

12. **H. diversifolius,** *Jacq.*; *DC. Prod.* i. 449. A tall, rigid herb or undershrub, sprinkled with a rigid pubescence, the branches and petioles more or less beset with small conical prickles. Leaves broadly cordate or nearly orbicular, irregularly toothed, angular or more or less 5-lobed. Flowers in a terminal raceme, on very short pedicels in the axils of small lanceolate or 3-fid floral leaves, often reduced, especially the upper ones, to small linear bracts. Bracteoles linear, and calyx with marginate lobes, as in *H. radiatus*, but the lobes are narrower, and usually densely hispid with rigid bristly hairs. Capsule acuminate, very hispid. Seeds glabrous.—Bot. Reg. t. 381; *H. Beckleri*, F. Muell. Fragm. ii. 117.

Queensland. Rockhampton, *Thozet?*

N. S. Wales. Hunter's river, *R. Brown*; Clarence river, in woods, *Beckler*; along the river, not common, *Wilcox*.

The species is chiefly found in S. Africa, Mauritius, and Madagascar, but is also common in waste places in the Fiji and other S. Pacific islands. In E. India it appears to be in gardens only. Thozet's specimen is somewhat doubtful, it is much more hispid, but insufficient for determination.

13. **H. splendens,** *Fraser*; *Grah. in Edinb. Phil. Journ., Apr.–June*, 1830. A tall shrub, of great beauty, attaining 12 to 20 ft., densely clothed with a soft velvety tomentum, the branches and petioles armed with small scattered prickles or bristles. Leaves on long petioles, broadly ovate-cordate or palmately 3 or 5-lobed, often 6 or 7 in. long, the lobes oblong-acuminate or lanceolate, often narrowed at the base. Stipules often 2 on each side. Flowers very large, rose-coloured, on pedicels about as long as the petioles. Bracteoles 10 to 15 or sometimes many more, linear-subulate, as long as the calyx, densely hispid or softly villous. Calyx at least 1 in. long, densely tomentose or hispid, deeply divided into lanceolate lobes, with a dorsal and marginal nerve, as in *H. radiatus*. Petals 3 in. long or more, glabrous. Capsule silky-hairy. Seeds glabrous.—Bot. Mag. t. 3025; Bot. Reg. t. 1629; *Abelmoschus splendens*, Walp. Rep. i. 309.

Queensland. Percy Island, N.E. coast, *A. Cunningham*; Rockhampton, *Thozet*; Moreton Bay, *F. Mueller*.

N. S. Wales. Clarence and Hastings rivers, *Fraser*, *Beckler*.

14. **H. zonatus,** *F. Muell. Fragm.* i. 221. A shrub with a scabrous tomentum, sometimes short and close, sometimes dense and velvety, the rather slender branches occasionally hirsute or bristly. Leaves from orbicular-cordate to ovate, the larger ones attaining 3 or 4 in., and shortly and broadly 3-, 5-, or 7-lobed, the upper ones entire or toothed and often narrow.

Flowers rather large, pink, on very short pedicels in the upper axils. Bracteoles narrow and rigid, rarely exceeding half the length of the calyx, free or slightly united at the base. Calyx nearly ¾ in. long, densely tomentose, deeply divided into lanceolate lobes, prominently 1-nerved and with thickened margins, as in the preceding species. Petals 1½ to 2 in. long, nearly glabrous. Style-branches short, spreading. Capsule very hispid, nearly globular, shorter than the calyx. Seeds glabrous.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*; W. coast of the Gulf, *Leichhardt*; rocky banks of the Seven Emu, Macarthur and Nicholson rivers, *F. Mueller*.

15. **H. Coatesii,** *F. Muell. Fragm.* iii. 5. A shrub, evidently very nearly allied to *H. zonatus*, with the same shaped leaves and flowers, but much more densely tomentose, hirsute with rather long rigid or woolly hairs, and the flowers much smaller. Calyx about ½ in. long, very hirsute, the lobes much narrower than in *H. zonatus*, the corolla apparently about ¾ in. long.

N. Australia. Hammersly range, near Nichol Bay, *F. Gregory's Expedition*. The specimen is very incomplete. It may possibly prove to be a variety of *H. zonatus* (*Herb. F. Muell.*)

16. **H. leptocladus,** *Benth.* Apparently a low herb or undershrub, with slender branches, rough with short rigid stellate hairs. Leaves on rather long petioles, ovate-lanceolate, lanceolate or oblong, 1 to 2 in. long, irregularly toothed, narrowed or rounded at the base, roughly pubescent on both sides with rigid stellate hairs. Flowers apparently pink, on rather long pedicels in the upper axils. Bracteoles about 7 to 9, linear-subulate, rarely exceeding half the length of the calyx. Calyx about ½ in. long, pubescent or hispid with stiff stellate hairs, deeply divided into lanceolate-acuminate, 1- or 3-nerved lobes, without thickened margins. Petals 1 to 1½ in. long, glabrous. Capsule nearly globular. Seeds 2 or 3 in each cell, glabrous.

N. Australia. Islands of Carpentaria Bay, *R. Brown*; Victoria river, *Bynoe, F. Mueller*. This species resembles in some respects *H. microchlænus*, but is much more slender and less tomentose, and both petals and seeds appear to be quite glabrous.

17. **H. setulosus,** *F. Muell. Fragm.* i. 221. A much-branched, viscid, strong-scented shrub of several feet, covered with resinous glands, the branches very hispid with long spreading bristles. Leaves broadly cordate or orbicular, mostly 1 to 1½ in. long, toothed, more or less hirsute or pubescent with scattered rigid stellate hairs. Flowers rather large, pink with a dark centre, on axillary pedicels about as long as the petioles. Bracteoles linear, rigid, about as long as the calyx. Calyx about ¾ in. long, pubescent and glandular like the leaves, deeply divided into lanceolate 3-nerved lobes. Petals about 1½ in. long. Staminal column conspicuously produced above the filaments and 5-toothed. Capsule globular, hispid, shorter than the calyx. Seeds glabrous or minutely scabrous.

N. Australia. Rocks on the Macarthur and Seven Emu rivers, Gulf of Carpentaria, *F. Mueller*.

18. **H. pentaphyllus,** *F. Muell. Fragm.* ii. 13. An erect or diffuse annual of a few feet, glabrous except a few rigid hairs on the upper leaves and inflorescence. Leaves divided into 5 or rarely 7 oblong or lanceolate toothed segments, mostly 1 to 2 in. long. Flowers rather large, yellow with

a brown centre, the pedicels in the upper axils longer than the petioles. Bracteoles linear, rigid, fully as long as the calyx. Calyx ¾ to 1 in. long, deeply divided into broadly lanceolate acuminate lobes, glabrous or slightly ciliate, 1- or 3-nerved. Petals 1 to 1½ in. long. Capsule globular, scarcely acuminate, hirsute. Seeds glabrous.

N. Australia. Victoria river and Arnhem's Land, *F. Mueller*; gathered also in *Leichhardt's* and *M*

19. **H. geranioides,** *A. Cunn. Herb.* A low branching annual of 1 to 2 feet, densely hispid with long rigid stellate hairs or bristles. Leaves deeply divided into 3 or 5 oblong-linear or cuneate segments, mostly about 1 in. long, lobed or coarsely toothed, the lobes or teeth obtuse, hispid on both sides. Flowers small for the genus, on hispid pedicels often as long as the leaves. Bracteoles 8 to 10, linear-subulate, hispid. Calyx 4 to 5 lines long, hirsute, deeply divided into lanceolate-acuminate, 3-nerved lobes. Petals about ¾ to 1 in. long, dark at the base. Filaments short, along the upper part of the column. Stigmas capitate. Capsule small, globular, glabrous. Seeds glabrous.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*: Vansittart's Bay, N.W. coast, *A. Cunningham*.

20. **H. vitifolius,** *Linn.*; *DC. Prod.* i. 450. A coarse, erect, divaricately-branched herb of several feet, in India usually shortly tomentose, more hispid in Africa, and in the Australian specimens still more beset with rigid hairs. Leaves broadly cordate, 2 to 3 in. long and broad, usually broadly 3- or 5-lobed and toothed, very densely and softly villous-tomentose. Flowers rather large, pale yellow with a purple centre, on short pedicels, the upper ones forming a short dense leafy raceme. Bracteoles 7 to 10, linear-subulate, shorter than the calyx. Calyx deeply divided into broadly lanceolate lobes, often enlarging after flowering. Capsule depressed globular, beaked in the centre, 5 to 8 lines diameter, hirsute with scattered hairs, the 5 acute angles raised into wings and transversely veined. Seeds glabrous.—F. Muell. Fragm. ii. 114.

Queensland. Keppel Bay, *R. Brown*; Percy Island, *A. Cunningham*; Dawson river *F. Mueller*; Palm Islands, *Henne*; outskirts of the northern brush, *Leichhardt*. A very common species in E. India, extending into the warmer regions of Africa, and introduced into the W. Indies, readily known by its winged capsules.

21. **H. panduriformis,** *Burm. Fl. Ind.* 151, *t.* 47, *f.* 2. A tall, coarse herb or shrub, densely covered with a tomentum, usually thick and velvety on the upper side of the leaves, closer and whiter on the under side and on the petioles and branches, where it is often intermixed with long spreading bristly stellate hairs. Leaves broad-cordate, 3 or 4 in. long and broad, or rarely narrow, usually 5-angled or broadly lobed and irregularly crenate. Flowers yellow, on very short pedicels in the axils of the upper reduced leaves, the side-branches often assuming the appearance of several-flowered peduncles. Bracteoles 6 to 8, linear or linear-spathulate, often as long as the calyx, more herbaceous than in most species and always dilated above the middle. Calyx 7 to 9 lines long, densely tomentose-hirsute, the lobes lanceolate, 1-nerved. Petals 1 to 2 in. long, densely hirsute where exposed in the bud. Capsule

ovoid-globular, very hispid. Seeds shortly pubescent or rarely glabrous.—DC. Prod. i. 455; F. Muell. Fragm. ii. 115; *H. tubulosus*, Cav. Diss. 161, t. 68, f. 2; DC. Prod. i. 447.

N. Australia. Victoria river, *F. Mueller;* Maitland river, *F. Gregory's Expedition;* Albert river, *Henne.* The species is widely spread over tropical Asia and Africa. Burmann's figure represents a narrow-leaved form, not as yet found in Australia, and rare in India.

22. **H. Normani,** *F. Muell. Fragm.* iii. 4. An undershrub, with apparently simple erect stems of about 1 ft., densely velvety-tomentose. Leaves petiolate, from ovate to lanceolate, acute or obtuse, 2 to 3 in. long, obscurely sinuate-toothed, tomentose on both sides, especially underneath. Peduncles 1½ to 2 in. long. Involucre of 5 broadly-ovate or rhomboidal leafy bracteoles, nearly as long as the calyx, distinct or scarcely united at the base. Calyx tomentose, about ½ in. long, deeply divided into ovate-lanceolate 3-nerved lobes. Petals about twice as long or rather more, glabrous.

Queensland. Palm Island, *Henne;* Fitzroy Island, *M'Gillivray.*

23. **H. Krichauffianus,** *F. Muell. Rep. Babb. Exped.* 7. An undershrub, with the habit and foliage of some varieties of *H. Sturtii*, but the tomentum closer and whiter. Leaves ovate or ovate-lanceolate, obtuse, 1 to 1½ in. long, irregularly and usually rather deeply crenate-toothed. Flowers rather larger than in most forms of *H. Sturtii.* Bracteoles linear-subulate, almost free, shorter than the calyx and sometimes very short. Calyx very tomentose. Petals 1 to 1½ in. long. Seeds slightly pubescent.

N. S. Wales. Darling river, *Victorian Expedition.*

S. Australia. Lake Gregory, *Babbage's Expedition;* Cooper's Creek, *Victorian Expedition;* towards Spencer's Gulf, *Warburton.*

24. **H. Sturtii,** *Hook. in Mitch. Trop. Austr.* 363. A rather rigid, simple or branched undershrub, rarely exceeding 1 ft., clothed with a whitish tomentum, either short and rather close, or dense and velvety or sometimes almost floccose. Leaves broadly cordate or ovate, rarely ovate-lanceolate, mostly 1 to 1½ in. long, obtuse, irregularly crenate-toothed, usually rather thick and soft. Flowers few in the upper, axils rather small, white or pink. Involucre obconical or campanulate, with 7 or 8 teeth or short lobes, very variable in shape, but usually nearly as long as the calyx. Calyx very tomentose, the lobes shorter or rarely longer than the cup, thick and soft, obscurely 3-nerved. Petals varying from ¾ to fully 1½ in. long. Staminal column slender, with scattered filaments as in most species, but the filaments not so numerous and longer than usual, showing an approach to those of *H. brachysiphonius.* Capsule globular, silky. Seeds glabrous or rarely woolly.—F. Muell. Fragm. ii. 13.

N. Australia. N.W. coast, *A. Cunningham;* Victoria river, *F. Mueller;* N. of M'Donnell range, *M'Douall Stuart.*

Queensland. Mackenzie, Burdekin, Suttor, and Dawson rivers, Peak Downs, etc., *F. Mueller;* Fitzroy Island, *M'Gillivray;* Maranoa and Belyando rivers, *Mitchell.*

N. S. Wales. In marshes and meadows of the interior, *Sturt, Fraser, Mitchell,* etc.; Clarence river, *Beckler;* New England, *C. Stuart.*

This very variable species, remarkable for its cup-shaped short-lobed involucre, presents in our specimens the following principal forms:—

a. grandiflora. Involucre shorter than the calyx, with triangular or lanceolate, somewhat acute, erect teeth. Petals above 1 in., and often 1½ in. long.—Mount Goningbear in N. S. Wales.

b. Muelleri. Involucre of the preceding variety with the small flowers of the following one.—Gathered by most collectors, as well as the following variety.

c. Sturtii. Involucre as long as the calyx, dilated, and spreading at the top, with short broad rounded lobes. Calyx 3 to 4 lines long, with rather short lobes. Petals rarely exceeding 1 in., and often much smaller.—The most common N. S. Wales form.

d. campylochlamys, F. Muell. Both involucre and calyx more or less deeply divided into lanceolate acuminate lobes. Calyx otherwise rather longer than in the preceding varieties.—Victoria river and Sturt's Creek, *F. Mueller;* Dampier's Archipelago, *A. Cunningham.* In the latter specimens the seeds are woolly, but in the Victoria river plant they appear to be glabrous, as in the other varieties.

e. platychlamys. Very densely clothed with a somewhat rigid, velvety tomentum. Involucre very spreading, often above 1 in. diameter, with broad lobes. Calyx exceeding ½ in., with large ovate or ovate-lanceolate lobes.—Victoria river, *F. Mueller.*

25. **H. Huegelii,** *Endl. in Hueg. Enum.* 10. A tall shrub, more or less scabrous or tomentose with scattered stellate hairs, or rarely glabrous, and never hoary. Leaves deeply 3- or 5-lobed, 1 to 2 or even 3 in. long, the lobes obovate, oblong, cuneate or rarely lanceolate, more or less pinnatifid, 3-lobed or coarsely toothed, often undulate, and the lobes or teeth obtuse or rarely rather acute. Flowers large, violet purple (or rarely yellow?), the pedicels rather long, bearing sometimes a small bract, and still more rarely a second flower at the joint. Involucral bracteoles more or less united at the base into a short broad cup, with 7 to 10 linear or subulate teeth or lobes very variable in length, rarely nearly free to the base. Calyx ¾ to nearly 1 in. long, tomentose or softly villous, deeply divided into lanceolate-acuminate 3- or 5-nerved lobes. Petals 2 to 3 in. long, softly tomentose or villous outside where exposed in the bud. Styles united almost to the stigmas, which are large and spreading. Capsule ovoid-globose, tomentose or villous, the cells hairy inside. Seeds glabrous.

S. Australia. Goose Island Bay and Memory Cove, *R. Brown;* Mount Arden, Mount Remarkable, and Port Lincoln, *F. Mueller;* Streaky Bay, Venus Bay, etc., *Warburton.*

W. Australia. From Cape Riche, *Preiss, n.* 1340, to Swan River, *Fraser, Drummond, Preiss, n.* 1336, 1339, 1341, and others; and Murchison river, *Drummond, Oldfield,* etc.

A variable species, of which the following are the most conspicuous forms in our herbaria:—

a. angulatus. Glabrous, except a close tomentum on the flowers; branches strongly angular, by prominent lines decurrent from the stipules. Flowers large.—Murchison river.

b. glabrescens. Stem and leaves glabrous or slightly tomentose, the branches terete or with slightly raised angles. Flowers large, tomentose, drying of a pale colour.—Swan River. To this form should be referred the original specimen of *H. Huegelii.* My suspicion that the statement that it had a yellow flower, purple in the centre, originated in a mistake, has been fully confirmed by Dr. Fenzl, who has sent me full notes on the varieties exemplified in the Vienna Herbarium.

c. Wrayæ. More or less abundantly sprinkled or clothed with a scabrous tomentum or stellate hairs. Flowers large, of a bluish-purple. Bracts united. Calyx densely tomentose-villous.—*H. Wrayæ*, Lindl. Bot. Reg. 1840, t. 69; *Paritium Wrayæ*, Walp. Rep. i. 311; *H. Huegelii*, Miq. in Pl. Preiss. i. t. 239; *H. Pinonianus*, Miq. l. c. 240, but not of Gaudichaud.—S. and W. Australia.

d. leptochlamys. Like the last, but more villous, and the bracteoles longer, free to the base.—Murchison river. The stigmas appear to be erect and closed, almost as in *Fugosia*, but I am not sure that they are perfect in the very few flowers we have.

e. grossulariæfolius. Like *Wrayæ*, but the flowers rather smaller. Leaves often, but not always smaller, with broader and shorter lobes.—*H. grossulariæfolius*, Miq. in Pl. Preiss. i. 240; Bot. Mag. t. 4329; *H. Meisneri*, Miq. l. c., *H. geraniifolius*, Turcz. in Bull. Mosc. 1858, i. 195.—Swan River and S. coast.

26. **H. tiliaceus,** *Linn.; DC. Prod.* i. 454. A small tree. Leaves on long petioles, orbicular-cordate, shortly acuminate, entire or crenulate, white or hoary underneath with a close short tomentum, nearly glabrous above, 3 to 5 in. diameter. Stipules large, broadly oblong, very deciduous. Flowers large, yellow with a dark crimson centre, on short peduncles in the upper axils or at the ends of the branches. Involucre campanulate, divided to about the middle into 10 to 12 lobes, about half the length of the calyx. Calyx nearly 1 in. long, with lanceolate 1-nerved lobes. Petals 2 to 3 in. long, slightly tomentose outside. Capsule nearly 1 in. diameter, the valves bearing the dissepiments in their centre, and their thin margins turned inwards so as to make the capsule appear 10-celled.—*Paritium tiliaceum*, St. Hil. Fl. Bras. Mer. i. 256; Wight, Ic. Pl. t. 7.

N. Australia. Islands of the Bay of Carpentaria, *R. Brown*, *Henne;* Port Molle, *M'Gillivray.*

Queensland. *Burdekin Expedition;* Rockhampton, *Thozet.*

A common seacoast tree in most tropical countries, particularly abundant in the islands of the Pacific.

10. LAGUNARIA, G. Don.

Bracteoles 3 or 4, broad and united at the base, often very deciduous. Calyx very shortly 5-lobed. Staminal column bearing numerous filaments on the outside below the 5-crenate summit. Ovary 5-celled, with several ovules in each cell. Style clavate at the top, with 5 distinct ovate radiating stigmas. Capsule loculicidally 5-valved, the endocarp villous inside and separating from the pericarp. Seeds reniform, thick, glabrous.—A tree. Leaves entire, sprinkled or curved, with scurfy scales. Flowers large, axillary, on short thick pedicels.

The genus, scarcely perhaps sufficiently distinct from *Hibiscus*, is limited to a single species, represented, however, by two distinct varieties, one Australian, the other peculiar to Norfolk Island.

1. **L. Patersoni,** *Don, Gen. Syst.* i. 485, var. *bracteata.* A tree, the young parts and inflorescence more or less covered with minute scurfy scales, but otherwise glabrous. Leaves petiolate, oblong or broadly lanceolate, rarely ovate-oblong, 3 to 4 in. long, entire, somewhat coriaceous, white underneath when young, glabrous and pale-green on both sides when full grown, the scales of the under surface almost disappearing. Pedicels very short and angular. Bracteoles 3 to 5, very obtuse, united in a broad, shortly-lobed cup, usually persistent at the time of flowering in the Australian variety, but sometimes even these falling off early. Calyx 4 to 5 lines long. Petals narrow, above 1½ in. long, slightly tomentose outside.

Queensland. Port Denison, *Fitzalan;* Port Cowper, *T. Sutherland;* Cumberland Islands, *Herb. Mueller.*

The Norfolk Island form (*Hibiscus Patersonius*, Andr. Bot. Rep. t. 286; *H. Patersoni*, DC. Prod. i. 454; *Lagunæa Patersonia*, Bot. Mag. t. 763; *L. squamea*, Vent. Jard. Malm. t. 42) is much more scaly-tomentose, the leaves are broader and very white underneath, and the bracteoles fall off at so very early a stage that they have always been said to be entirely

wanting. I had, on that account, at first considered the Australian plant as distinct, but I have since seen the bracts on very young buds of the Norfolk Island one, and observe them to be here and there very deciduous on Australian specimens, and the other characters, although as far as hitherto known constant, may not be sufficient to distinguish the two as more than varieties or races.

11. FUGOSIA, Juss.

Bracteoles 3, distinct and narrow, or several united in a 3- to 6-toothed involucre. Calyx 5-lobed. Staminal column bearing numerous filaments on the outside, below the truncate or 5-toothed summit, or rarely quite to the top. Ovary 3- to 5-celled, with 3 or more ovules in each. Style thickened towards the top, grooved or divided into short, erect lobes, with decurrent stigmas. Capsule loculicidally 3- to 5-valved. Seeds obovoid-globular or slightly reniform, usually pubescent or woolly. Cotyledons much folded over the radicle.—Shrubs or undershrubs, with the habit of *Hibiscus*, but usually more glabrous. Leaves entire or lobed, rarely divided. Stipules small or subulate and deciduous. Flowers usually large, yellow or purple. Calyx often marked with black dots, but not the cotyledons.

The genus comprises several species from tropical and subtropical regions of America and one from Africa, but none from Asia. The Australian ones are all endemic. It is very nearly allied on the one hand to *Hibiscus*, on the other to *Gossypium*, differing from the former chiefly in the style, from the latter in the bracteoles.

Involucre minutely toothed, placed a little below the calyx. Glabrous or nearly so. Ovary-cells 5.
  Leaves entire, cuneate-oblong or broadly linear . . . . 1. *F. cuneiformis.*
  Leaves narrow-linear or almost terete, mostly deeply divided . . 2. *F. hakeæfolia.*
Bracteoles 3, distinct, on the base of the calyx. Ovary-cells usually 3 or 4.
  Whole plant softly tomentose.
    Calyx-lobes linear or lanceolate. Bracteoles linear . . . . . 3. *F. australis.*
    Calyx truncate, minutely 5-toothed. Bracteoles setaceous, minute 4. *F. thespesioides.*
  Plant glabrous or very slightly hoary-tomentose.
    Calyx deeply divided into lanceolate lobes.
      Leaves ovate or lanceolate, narrowed at the base, on very short petioles . . . . 5. *F. punctata.*
      Leaves orbicular, 5-nerved, on petioles of 1 in. . . . . . 6. *F. latifolia.*
    Calyx truncate, with small linear lobes. Leaves on long petioles, cordate, acuminate . . . . 7. *F. populifolia.*

(Some varieties of *Hibiscus Huegelii* appear to have sometimes the stigmatic lobes erect, but the bracteoles and other characters are more those of *Hibiscus*.)

1. **F. cuneiformis,** *Benth.* Shrubby and glabrous. Leaves cuneate-oblong or broadly linear, obtuse, 1 to 2 in. long, entire, thick and somewhat fleshy. Peduncles short and thick. Involucre very small, minutely 5 or 6-toothed, placed a little below the calyx. Calyx ¾ to 1 in. long, glabrous or minutely tomentose, and occasionally glandular-dotted, deeply divided into lanceolate 1-nerved lobes. Petals about 1½ in. long, slightly tomentose. Capsule 5-celled, ovoid-oblong, acuminate, slightly tomentose. Seeds numerous, covered with long woolly hairs.—*Hibiscus cuneiformis*, DC. Prod. i. 454; *Lagunaria cuneiformis*, G. Don, Gen. Syst. i. 485.

W. Australia. Seacoast, Dirk Hartog's Island, *A. Cunningham, Milne;* Sharks Bay, *Sanford.*

2. **F. hakeæfolia,** *Hook. Bot. Mag. t.* 4261. An erect shrub, flowering young, but attaining 8 to 10 ft., entirely glabrous, or tomentose on the flower only. Leaves from deeply bipinnatifid to trifid only, or the upper ones entire, often several inches long, the whole leaf or lobes narrow-linear, somewhat fleshy, grooved above or almost terete. Flowers large, of a purple lilac, on axillary peduncles, articulate, and often bearing a small bract about the middle. Involucre placed a little below the calyx, very small, divided into 3 to 6 short, rigid, unequal teeth. Calyx ¾ to 1 in. long, deeply divided into lanceolate-acuminate 3-nerved lobes. Petals 1½ to 2 in. long. Capsule tomentose, ovoid, with a short point, 5-celled. Seeds woolly.—*Hibiscus hakeæfolius,* Giord.; Endl. in Hueg. Enum. 10; *H. multifidus,* Paxt. Fl. Gard. vii. 103, with a fig.

S. Australia. Goose Island Bay, S. coast, *R. Brown;* in the interior, *M'Douall Stuart.*

W. Australia. From King George's Sound, *Fraser,* to Swan River, *Drummond, Preiss, n.* 1342, and Murchison river, *Drummond, Oldfield.*

Var. *coronopifolia.* Leaf-segments often somewhat dilated and deeply toothed. *Hibiscus lilacinus,* Lindl. Bot. Reg. t. 2009; *H. coronopifolius,* Miq. in Pl. Preiss. i. 239 (from the description); *Lagunaria lilacina,* Walp. Rep. i. 311. W. Australia.

3. **F. australis,** *Benth.* An undershrub of several feet, hoary with a dense but very short tomentum. Leaves broadly or narrow-ovate, obtuse, 1½ to 2½ in. long, entire or more or less sinuate or 3-lobed. Flowers rather large, pink, on very short pedicels, which are often clustered 2 or 3 together at the top of axillary peduncles, with a bract or small leaf under each. Bracteoles 3, linear, distinct. Calyx from ½ to ¾ in. long, tomentose and marked with black glandular dots, the lobes lanceolate or almost linear, varying very much in length. Petals 1½ in. long, slightly tomentose outside. Capsule obovoid-oblong, shortly acuminate, tomentose, 3- or 4-valved. Seeds numerous, woolly.—*Gossypium australe,* F. Muell. Fragm. i. 46, and iii. 6.

N. Australia. Barren plains, not rare, *F. Mueller;* N.W. coast, *Bynoe;* Maitland river, *F. Gregory's Expedition;* Gulf of Carpentaria, *Landsborough.*

In habit and foliage this much resembles the Brazilian *F. phlomidifolia,* St. Hil., which has, however, more numerous bracteoles and yellow flowers.

4. **F. thespesioides,** *Benth.* Habit nearly that of *F. australis,* but larger and more tomentose, especially the inflorescence and under side of the leaves, which are somewhat rust-coloured. Leaves orbicular or broadly ovate, 2 to 4 in. long, softly tomentose. Flowers large, on short pedicels, or the lower ones on longer peduncles, articulate and bracteate below the summit. Bracteoles 3 or rarely 5, usually minute and setaceous. Calyx broadly cup-shaped, truncate, with 5 minute distant teeth, about ½ in. diameter, tomentose. Petals above 2 in. long, tomentose outside. Capsule nearly globose, twice as long as the calyx, hard and almost woody, 3-celled and 3-valved. Seeds apparently pubescent, but not seen ripe.—*Hibiscus thespesioides,* R. Br. Herb.

N. Australia. N. coast, without any precise locality indicated, *R. Brown* (*Hb. R. Br.*).

5. **F. punctata,** *Benth.* Apparently shrubby, with tall erect branches, the whole plant glabrous or very minutely hoary. Leaves on very short petioles, from ovate to lanceolate, mostly acute, 2 to 3 in. long, penninerved or

obscurely 3-nerved at the base. Flowers large, on rather long pedicels in the axils of the uppermost reduced leaves. Bracteoles 3, lanceolate, persistent. Calyx about 1 in. long, deeply divided into lanceolate, obscurely 1 or 3-nerved lobes, marked with a few black dots. Petals fully 2 in. long. Capsule small, nearly globose but rather acute, 3-valved. Seeds apparently globose, but not seen ripe.—*Hibiscus punctatus*, A. Cunn. Herb.

N. Australia. Port Essington, *A. Cunningham.*

6. **F. latifolia,** *Benth.* Habit and general characters of *F. punctata*, but the leaves are orbicular or broadly ovate, 5-nerved, on petioles of 1 in. or more, and the calyx-lobes are marked each with 3 strongly raised nerves, which unite into 10 prominent ribs on the tube. The whole plant is also somewhat hoary with a minute pubescence, especially the inflorescence and younger leaves. Petals and stamens not seen. Capsule of *F. punctata.*

N. Australia. Careening Bay, N.W. coast, *A. Cunningham.*

7. **F. populifolia,** *Benth.* Apparently shrubby, with slender, perhaps procumbent branches, quite glabrous or with a minute pubescence on the under side of the leaves. Leaves on long petioles, cordate, long-acuminate, entire, rarely above 2 in. long, green on both sides. Flowers rather large, on pedicels longer than the petioles. Bracteoles 3, linear-lanceolate, reflexed. Calyx not ½ in. diameter, marked with black dots, almost truncate, with linear-acuminate lobes about as long as the tube. Petals nearly 1½ in. long, minutely tomentose outside. Capsule globular, glabrous, 3-valved, but not seen fully ripe.

N. Australia. Greville Island, Montague Sound, Isles of King George IV.'s Sound, N.W. coast, *A. Cunningham;* N.W. coast, *Bynoe.*

12. THESPESIA, Corr.

Bracteoles 1 to 5, small or deciduous. Calyx truncate, minutely 5-toothed or rarely 5-lobed. Staminal column bearing numerous filaments on the outside, below or up to the summit. Ovary 5-celled, with few ovules in each cell. Style club-shaped at the top, 5-furrowed or obscurely divided into erect stigmatic lobes. Capsule hard, almost woody, indehiscent or loculicidally 5-valved. Seeds obovoid, glabrous or woolly. Cotyledons very much folded, enclosing the radicle, often black-dotted.—Trees or tall herbs. Leaves large, entire or angularly lobed. Flowers large, usually yellow.

A small genus, limited to tropical Asia, the Pacific isles, and eastern Africa, the Australian species being one which extends over the whole range. Closely allied to *Hibiscus*, *Fugosia*, and *Gossypium*, it differs from the former chiefly in the style, from the two latter generally either in the calyx or bracts, and from all in the more woody capsule.

1. **T. populnea,** *Corr.; DC. Prod.* i. 456. A tree, with the young parts and under side of the leaves sprinkled with minute rust-coloured scales, otherwise glabrous. Leaves broad-cordate, acuminate, entire, 4 or 5 in. long. Flowers reddish-yellow, rather large, on axillary pedicels usually shorter than the petioles. Bracteoles 1 to 3, lanceolate and deciduous, or sometimes wanting. Calyx very open, 6 to 8 lines diameter, truncate, with minute teeth. Petals broad, 1½ to 2 in. long. Capsule fully 1½ in. diameter, hard

and woody, indehiscent or opening longitudinally when very dry.—Wight, Ic. t. 8.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown, Henne.*

Queensland. N.E. coast, *A. Cunningham, M'Gillivray.*

The species is widely spread over the seacoasts of tropical Asia, extending from eastern Africa to the Pacific Islands. It is also introduced into the West Indies.

13. GOSSYPIUM, Linn.

(Sturtia, *R. Br.*)

Bracteoles 3, large and cordate. Calyx much shorter, truncate or shortly 5-lobed. Staminal column bearing numerous filaments outside, below or up to the top. Ovary 5-, rarely 4-celled, with several ovules in each cell. Style club-shaped at the top, furrowed, with decurrent stigmas. Capsule loculicidally 5-, rarely 4-valved. Seeds angular or nearly globular, very woolly or nearly glabrous; cotyledons very much folded, enclosing the radicle.—Tall herbs, shrubs, or almost trees. Leaves 3- to 9-lobed, or rarely entire. Flowers large, yellow or purple. Bracteoles entire, toothed or cut, usually, as well as the calyx and cotyledons, marked with black dots.

The genus, besides the Australian species, which is endemic, comprises the cultivated *Cotton,* whose various forms, described as species, races, or varieties, are distributed either as indigenous or introduced plants over the warmer regions both of the New and the Old World, but not hitherto found in a wild state in Australia.

1. **G. Sturtii,** *F. Muell. Fragm.* iii. 6. A shrub of several feet, glabrous and more or less marked with black dots. Leaves on rather long petioles, broadly ovate, entire, 1 to 2 in. long, rather coriaceous and glaucous. Flowers large, purple with a dark centre, on short pedicels in the upper axils. Bracteoles cordate, entire, ¾ to 1 in. long, many-nerved and black-dotted. Calyx not half so long, broad, truncate with minute or narrow-linear teeth, copiously black-dotted. Petals fully 2 in. long. Capsule ovoid, shortly acuminate, much longer than the calyx, usually 4-celled, glabrous but copiously black-dotted. Seeds very sparingly and shortly woolly.—*Sturtia gossypioides,* R. Br. App. Sturt. Exped. 5.

S. Australia. In the interior; Barren Range, *Sturt;* Elder's Range, *F. Mueller;* Mutanié Ranges, *Beckler;* Flinders Range, *Victorian Expedition;* towards Spencer's Gulf, *Warburton.*

14. ADANSONIA, Linn.

Calyx ovoid or oblong, deeply splitting into 3 to 5 lobes. Staminal column divided at the top into numerous filaments. Ovary 5- to 10-celled, with many ovules in each cell. Style shortly divided at the summit into as many radiating stigmas as there are cells. Fruit oblong, woody, indehiscent, the cells filled with a mealy pulp. Seeds reniform-globular, embedded in the pulp; cotyledons very much folded, enclosing the radicle.—Trees with a comparatively short trunk, acquiring an immense girth, the wood soft and spongy. Leaves digitate, with entire leaflets. Peduncles axillary, 1-flowered, bracteate. Flowers large, white, pendulous. Fruits large, pendulous.

Besides the Australian species, which is endemic, the genus only contains one other, the celebrated *Baobab* of tropical Africa, which extends into the western districts of East India.

1. **A. Gregorii,** *F. Muell. in Hook. Kew Journ.* ix. 14. A large tree, not lofty in proportion to its size, with an enormous gouty stem, attaining from 30 to 80 ft. in circumference, and usually contracted under the main branches of the head. Leaflets 5, 7, or rarely 9, oblong-lanceolate, acuminate, the larger ones 4 to 5 in. long, narrowed at the base but rarely petiolulate, minutely pubescent above, white-tomentose underneath. Flowers of a yellowish-white, on pedicels of 1 to 1½ inch. Calyx oblong and entire in the bud, and little more than ½ in. diameter, attaining 3 in. in length, and splitting into 3 to 5 lobes as the flower opens, tomentose outside, silky-villous inside. Petals 5 or rarely 4, cuneate-oblong, fully 4 in. long, silky-villous outside in their upper portion. Staminal column pubescent outside, rather shorter than the filaments. Fruit resembling a small gourd, in our specimens about 6 in. long and 3 to 4 in. diameter, but probably often larger, of a brownish-red colour, densely tomentose, exuding a dark red gum.

N. Australia. Sandy plains and low stony ridges, from the Glenelg to the western shores of Arnhem's Land, and rarely above 100 miles inland, *F. Mueller*, *G. Bennett*, and others. The interior substance of the fruit has an agreeable acidity, and, boiled with sugar, is of material service in scorbutic complaints. (See G. Bennett, 'Gatherings of a Naturalist,' 292, t. 5.)

The African *A. digitata*, which is closely allied, and, according to G. Bennett, has precisely the same fruit (above a foot long in our specimens), differs chiefly in broader leaflets, a broader calyx more regularly 5-cleft, broader petals, and still more numerous and shorter filaments.

15. BOMBAX, Linn.

(Salmalia, *Schott.*)

Calyx cup-shaped, truncate, or splitting into 3 to 5 lobes. Staminal column divided into numerous filaments, of which the inner ones, or nearly all, are more or less connected in pairs and united at the base into 5 or more bundles. Ovary 5-celled, with several ovules in each cell; style club-shaped, or shortly 5-lobed at the top. Capsule woody or coriaceous, opening loculicidally in 5 valves, the cells densely woolly inside. Seeds obovoid or globular, enveloped in the wool of the pericarp; albumen thin; cotyledons much folded round the radicle.—Trees. Leaves digitate, with leaflets usually entire. Peduncles 1-flowered, axillary or terminal. Flowers white or red.

The species are chiefly South American, with one from tropical Africa, and another from tropical Asia extending also into Australia.

1. **B. malabaricum,** *DC. Prod.* i. 479. A large tree, the trunk covered with short conical prickles. Leaves on long petioles, deciduous; leaflets 5 to 7, petiolulate, elliptical-oblong, acuminate, 4 to 6 in. long, coriaceous, entire, glabrous. Flowers large, red, on short pedicels, clustered towards the ends of the branches which are then destitute of leaves. Calyx above 1 in. long, thick and coriaceous, glabrous outside, silky-hairy inside, dividing into short broad obtuse lobes. Petals fully 3 in. long, oblong, tomentose outside, nearly glabrous within. Staminal column short, filaments much longer, but shorter than the petals, five innermost forked at the top, each branch bearing an anther, about 10 intermediate ones simple, and the numerous outer ones shortly united in 5 clusters. Capsule large, oblong, and woody.—*Salmalia malabarica*, Schott, Meletem. 35; *Bombax heptaphylla*, Cav.; Roxb. Pl. Corom. iii. 43, t. 247; Wight, Ill. t. 29.

N. Australia. Careening Bay, N.W. coast, *A. Cunningham.* The specimen consists of a single flower; the foliage and fruit are therefore described from East Indian specimens, where the species has a considerable range.

ORDER XXII. STERCULIACEÆ.

Flowers regular, hermaphrodite or unisexual. Calyx usually persistent, more or less deeply divided into 5 or rarely 4 or 3 valvate lobes or segments, or rarely splitting irregularly, or the sepals entirely free. Petals either 5, hypogynous, free, or adhering to the staminal column, contorted-imbricate in the bud, or small and scale-like, or none. Stamens usually united into a ring, a cup, or tube, with 5 terminal teeth or lobes (staminodia) alternating with the petals, and one or more anthers sessile or stipitate (on distinct filaments) in each interval, the anthers 2-celled and opening outwards, in longitudinal slits, or exceptionally the anthers are numerous or the staminodia wanting, or the stamens 5, free and alternate with the sepals or the anther-cells confluent or opening in terminal pores. Ovary free, 2- to 5-celled, with the carpels more or less united, rarely 10- or 12-celled, or reduced to a single carpel. Style entire, or divided into as many branches as there are cells, or rarely styles as many, nearly or quite free. Fruit various. Seeds sometimes hairy but not woolly, sometimes enveloped in pulp or strophiolate, the testa coriaceous, occasionally enclosed in an outer membranous integument; albumen fleshy or none; cotyledons usually foliaceous, flat or folded, the radicle shorter, next the hilum or rarely distant from it.—Herbs, shrubs, or trees, the tomentum or hairs stellate, rarely mixed with simple hairs. Leaves alternate or irregularly opposite, simple and pinnately or palmately nerved, entire toothed or lobed, or digitately compound. Stipules rarely wanting.

A large Order, chiefly tropical, dispersed over the New and the Old World, with some extratropical genera in S. Africa or Australia, and very few species without the tropics in the Northern hemisphere. Of the 19 Australian genera 10 are common to the tropical regions of the Old World or both of the Old and the New World, the remaining 9 are endemic, with the exception of single species of *Rulingia* and *Keraudrenia*, found in Madagascar.

Anthers 5 to 15, sessile or stipitate, surrounding the ovary at the top of a column or gynophore

Flowers unisexual or polygamous. No petals. Anthers sessile. No staminodia. Fruit-carpels separate, sessile or stipitate. Trees. Leaves simple or digitate. (Tribe **Sterculieæ.**)

Anthers irregularly clustered. Seeds albuminous.

Ovules 2 or more in each cell. Carpels follicular or opening along the inner edge . . . . 1. STERCULIA.

Ovules single in each cell. Carpels winged, indehiscent . . 2. TARRIETIA.

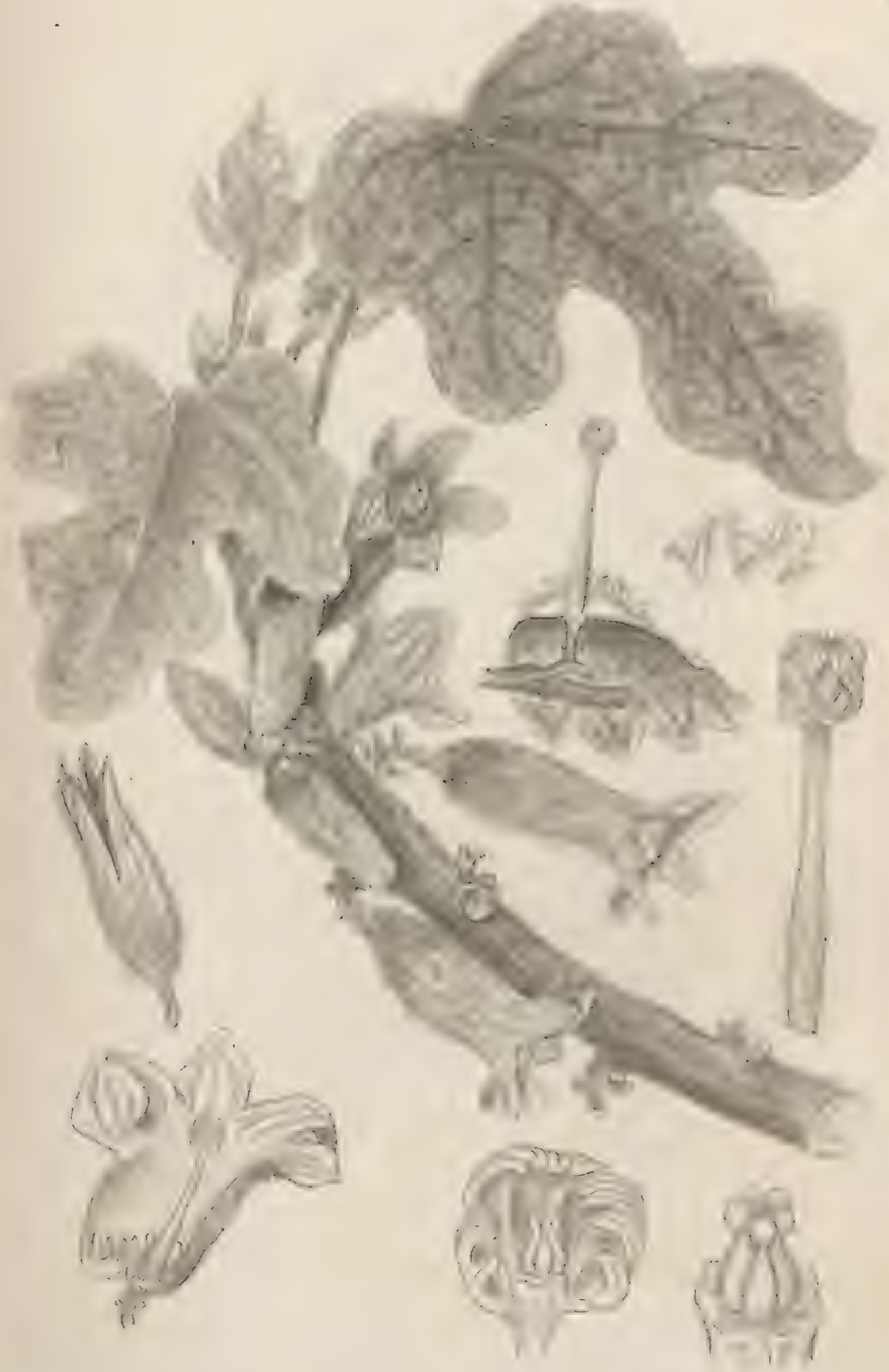
Anthers 5, in a ring. Ovules solitary. Carpels large, indehiscent. Albumen none . . . . 3. HERITIERA.

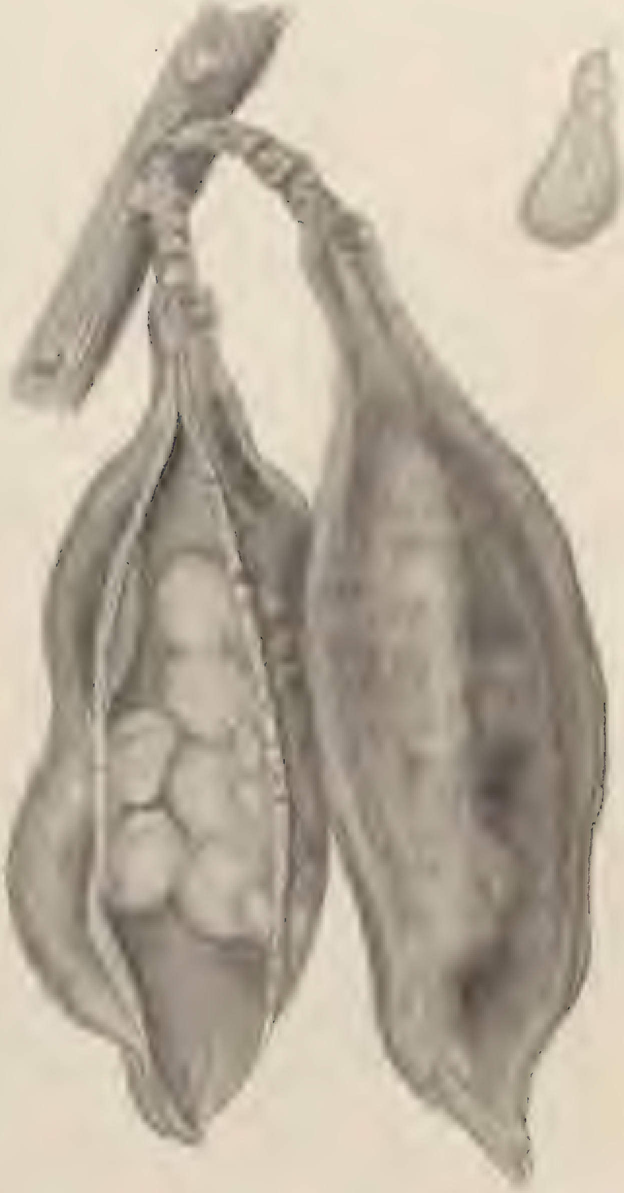
Flowers hermaphrodite. Petals 5, *clawed.* Anthers on short filaments, surrounding or alternating with 5 teeth of the column or staminodia. Leaves simple. (Tribe **Helictereæ.**)

Anther-cells divaricate or confluent into one. Fruit-carpels distinct, or spirally twisted . . . . 4. HELICTERES.

Anther-cells parallel. Fruit woody, 5-valved. Seeds winged . 5. PTEROSPERMUM.

Stamens 5 (or in *Abroma* more), united at the base in a short cup or ring, or rarely free, with or without intervening staminodia, and surrounding the sessile ovary.





Petals flat, longer than the calyx.
  Stamens 5, united in a cup, with 5 intervening elongated flat staminodia . . . . 6. MELHANIA.
  Stamens 5, united at the base without intervening staminodia. (Tribe **Hermannieæ.**)
    Ovary 5-celled . . . . 7. MELOCHIA.
    Ovary 2-celled . . . . 8. DICARPIDIUM.
    Ovary of one 1-celled carpel . . . . 9. WALTHERIA.
Petals with a short, broad, very concave base, and a sessile or stipitate lamina. (Tribe **Buettnerieæ.**)
  Lamina of the petals stipitate, longer than the calyx. Staminodia 5, obcordate, with 2 to 4 stamens between each . . . 10. ABROMA.
  Lamina of the petals short, sessile, stamens 5.
    Staminodia single between each 2 stamens, lanceolate . . . 11. RULINGIA.
    Staminodia 3 between each 2 stamens, all linear-spathulate, or the central one lanceolate, and the lateral ones subulate . 12. COMMERSONIA.
Petals small and scale-like or none. (Tribe **Lasiopetaleæ.**)
  Anthers (linear-oblong) opening outwards in parallel slits.
    Calyx herbaceous, scarcely enlarged, and not coloured after flowering. Staminodia large. Carpels membranous, winged 13. SERINGIA.
    Calyx enlarged after flowering, thin and coloured. Staminodia single or none. Capsule or carpels membranous, rounded or rarely winged . . . . 14. KERAUDRENIA.
    Calyx strongly ribbed after flowering. Staminodia 3 between each 2 stamens. Capsule hard or woody . . . . 15. HANNAFORDIA.
  Anthers (often obtusely sagittate or acuminate) opening in terminal or inwardly oblique pores, or in slits, extending more or less down the sides.
    Calyx divided to above or a little below the middle, enlarged, and coloured after flowering, each sepal with the midrib either very prominent inside or deeply coloured. Stipules leafy or rarely none . . . . 16. THOMASIA.
    Calyx divided to the middle or lower, each sepal with 3 or 5 ribs, very prominent after flowering. Stipules leafy . . 17. GUICHENOTIA.
    Calyx divided almost to the base, scarcely enlarging, obscurely several-veined at the base. Stipules none . . . . . . 18. LASIOPETALUM.
    Sepals entirely free, narrow and petal-like. Stipules very small or none . . . . 19. LYSIOSEPALUM.

1. STERCULIA, Linn.

(Brachychiton, Trichosiphon, *and* Pœcilodermis, *Schott;* Delabechea, *Lindl.*)

Flowers unisexual or polygamous. Calyx more or less deeply 5-cleft, rarely 4-cleft, usually coloured. Petals none. Staminal column adnate to the gynophore, bearing at the summit 15 or rarely 10 stamens, irregularly clustered in a head. Carpels of the ovary 5, distinct or nearly so, with 2 or more ovules in each. Styles united under the peltate or lobate stigma. Fruit-carpels distinct, spreading, either firm or woody, and scarcely opening along the inner edge, or thinner, and opening as follicles, even long before they are ripe. Seeds 1 or more in each carpel, rarely winged; albumen adhering to the cotyledons, often splitting in two, assuming the aspect of fleshy cotyledons; real cotyledons flat or nearly so, and thin, the radicle next the hilum or at the opposite end, or intermediate.—Trees. Leaves undivided or lobed, or digitately compound. Flowers in panicles or rarely racemes, mostly axillary, sometimes very short; terminal flowers usually female, in these the staminal column is shorter and the anthers less perfect than in the males, surrounding the base of the ovary; in the males the ovary is often entirely abortive.

A large genus, almost entirely tropical, and more abundant in Asia than in Africa or America, where however several species are found. The Australian ones are all endemic, except *S. fœtida*, which is a widely-spread Asiatic one.

The species of this genus were distributed by Schott into a number of genera, founded chiefly on the flowers and habit, afterwards reduced and rearranged by R. Brown, chiefly on carpological characters, without reference to habit or calyx. The majority of the Australian ones belong to the group distinguished by R. Brown chiefly by the seeds having a loose outer coating covered with hairs, which in some species are so adhesive that the seeds fall out in their inner coating only, leaving the outer coating adhering to the equally hairy endocarp, with the appearance of the cells of a beehive; and by the radicle next to the hilum. The seeds do not appear to cohere in all the species, in some they are hitherto unknown, and in flowers and habit, *S. ramiflora* and *S. rupestris*, *S. fœtida* and *S. quadrifida* are more different from each other than from species belonging respectively to other groups. Among species not Australian, the position of the radicle unites two very heteromorphous ones under *Firmiana*, and would (as observed to me by M. Poinsot, of the Paris Herbarium) lead to separate *S. mexicana* from other digitate-leaved American species. I have therefore, with Endlicher and others, considered Schott and Brown's genera as sections only.

SECT. 1. **Sterculia.**—*Radicle at the end remote from the hilum. Seeds and inside of the carpels glabrous.*

Leaves digitate. Calyx-lobes 5, spreading. Staminal column long and incurved . . . . 1. *S. fœtida.*
(See 12. *S. rupestris*, which has the leaves sometimes digitate.)
Leaves large, entire. Calyx-lobes 4, cohering at the tips . . . . . 2. *S. quadrifida.*

SECT. 2. **Brachychiton.**—*Radicle next the hilum. Seeds and inside of the carpels usually villous, often cohering. Leaves entire or lobed (digitate only on some branches of* S. rupestris). *Calyx-lobes spreading.*

Calyx-lobes (where known) with induplicate margins. Seeds (where known) scarcely cohering. Leaves tomentose or pubescent, at least underneath. Flowers large, sessile. (*Brachychiton*, Schott.)
  Leaves green and softly tomentose or pubescent on both sides.
    Leaves broad, entire or obscurely 5- or 7-lobed. Calyx broadly campanulate . . . . 3. *S. ramiflora.*
    Leaves 3-lobed. Calyx tubular-campanulate . . . . 4. *S. Bidwilli.*
    Leaves palmately 5- or 7-lobed . . . . 7. *S. lurida.*
  Leaves white underneath.
    Leaves angular or obscurely 5- or 7-lobed . . . . 5. *S. discolor.*
    Leaves palmately 5- or 7-lobed, with acuminate lobes . . . . 6. *S. incana.*
Calyx-lobes strictly valvate. Outer coating of the seeds usually remaining adherent to the endocarp. Leaves glabrous. Flowers in short panicles.
  Calyx narrow, lobes lanceolate, shorter than the tube. Leaves palmately 5- or 7-lobed (*Trichosiphon*, Schott) . . . . 8. *S. trichosiphon.*
  Calyx broadly campanulate, deeply lobed (*Pœcilodermis*, Schott).
    Leaves large, palmately 5- or 7-lobed. Flowers quite glabrous . 9. *S. acerifolia.*
    Leaves entire, ovate or cordate, or 3-lobed, acuminate. Flowers tomentose outside when young, glabrous inside. Follicles stipitate . . . . 10. *S. diversifolia.*
    Leaves cordate-acuminate, entire. Flowers tomentose outside, hirsute inside at the base. Follicles nearly sessile . . . . . 11. *S. caudata.*
    Leaves entire and lanceolate, or digitate. Flowers tomentose outside. Follicles long-stipitate . . . . 12. *S. rupestris.*

1. **S. fœtida,** *Linn.*; *DC. Prod.* i. 483. A tall stout tree, glabrous, except

the very young leaves. Leaves crowded at the ends of the thick branchlets, deciduous, digitately compound on long petioles; leaflets 5 to 11, elliptical oblong or almost lanceolate, 4 to 8 in. long, mostly acuminate, entire, coriaceous, contracted into short petiolules. Flowers rather large, of a dull red, coming out with the young leaves in loose, simple or branched racemes, not exceeding the petioles. Calyx deeply divided into 5 lanceolate spreading segments, about ½ in. long, glabrous outside, tomentose inside. Staminal column or gynophore slender and curved, both in the males and females. Ovary very villous, 5-celled, with many ovules in each cell. Follicles large, woody, glabrous outside, fibrous within. Seeds 10 to 15, oblong, the radicle remote from the hilum. R. Br. in Benn. Pl. Jav. Rar. 227; Wight, Ic. t. 181 and 364.

N. Australia. N. coast (*R. Brown*).

N. S. Wales. Hastings and Mackay rivers, *Beckler.*

I have not seen R. Brown's specimens, and Beckler's are leaves only. I insert the species therefore on Brown's authority, describing it from Indian specimens. It ranges over the East Indian and Malayan peninsulas and the Archipelago.

2. **S. quadrifida,** *R. Br. in Benn. Pl. Jav. Rar.* 233. Glabrous, except the inflorescence. Leaves petiolate, ovate or cordate, obtuse or acuminate, mostly 3 to 5 in. long. Racemes several, crowded within the uppermost leaves, 1 to 2 in. long, clothed with a stellate tomentum. Bracts broad, acuminate, very deciduous. Pedicels 2 to 4 lines. Calyx about 4 lines long, tomentose, cleft to the middle, the lobes usually 4, lanceolate, connivent and cohering at the tips. Staminal column short. Follicles sessile, ovoid, 2 to 3 in. long, hard and almost woody, minutely tomentose or glabrous. Seeds 2 to 4, ovoid, black, the radicle remote from the hilum.

N. Australia. Sims Island, *A. Cunningham;* Arnhem's Land, *F. Mueller;* Port Essington, *Armstrong;* Cape Upstart, *M'Gillivray.*

Queensland. Delta of the Burdekin and Port Denison, *Fitzalan;* Wide Bay, *Bidwill;* Moreton Bay, *F. Mueller.*

The northern specimens have longer and more acute leaves, and rather smaller flowers on longer pedicels than the eastern ones.

3. **S. ramiflora,** *Benth.* A shrub or small tree, clothed with a soft stellate tomentum or pubescence, which rarely disappears on the upper surface of the older leaves. Leaves on long petioles, broadly ovate-cordate or nearly orbicular, mostly acuminate, entire, angular or obscurely 3- or 5-lobed, often attaining 5 or 6 in. Flowers few, large, red, nearly sessile, and clustered in the axils of the upper leaves. Calyx broadly campanulate, 1 to 1½ in. long, the lobes shorter than the tube, spreading, obtuse, 3-nerved in the centre, with broad induplicate margins; inside the tube at the base are 5 small, inflexed, and very villous double scales. Staminal column slender, hirsute at the base. Ovary pubescent; stigmas recurved. Follicles shortly stipitate, 3 to 4 in. long, glabrous outside, villous inside, stipitate (according to R. Brown), with very numerous seeds; I have not seen them perfect.—*Brachychiton paradoxum*, Schott, Meletem. 34; *Brachychiton ramiflorum*, R. Br. in Benn. Pl. Jav. Rar. 234.

N. Australia. Brunswick and Vansittart's Bays, N.W. coast, *A. Cunningham;* Victoria river and Point Perron, *F. Mueller.*

4. **S. Bidwilli,** *Hook. Herb.* A shrub or tree, softly pubescent or tomentose in all its parts, closely allied to *S. ramiflora*, but differing in the leaves almost always deeply 3-lobed with acuminate lobes, green, and softly villous on both sides, and especially in the calyx, which is narrow, tubular-campanulate, 1 to 1½ in. long; the red colour and induplicate lobes are the same as in *S. ramiflora.*—*Brachychiton Bidwilli*, Hook. Bot. Mag. t. 5133.

Queensland. Wide Bay, *Bidwill;* Burdekin Expedition, *Herb. Mueller;* also in *Leichhardt's* collection.

F. Mueller's herbarium contains a leaf gathered by C. Moore in the mountains near Ipswich, precisely like some of those of *S. Bidwilli*, but with a memorandum by C. Moore that the flower is only ½ in. long. If that be the case, it probably forms a distinct species, named by F. Mueller *S. pubescens.*

5. **S. discolor,** *F. Muell.* A tall tree, the young shoots tomentose. Leaves very broadly cordate, nearly orbicular, shortly acuminate, angular or very shortly and irregularly 5- or 7-lobed, glabrous above, white underneath with a very close tomentum, mostly 4 to 6 in. diameter. Flowers (if correctly matched) like those of *S. ramiflora*, and similarly clustered. Calyx 1½ to 2 in. long, broadly campanulate, tomentose inside and out, divided to the middle into broad lobes with induplicate margins. Follicles very shortly stipitate, 4 to 6 in. long, acuminate; densely rusty-tomentose outside.—*Brachychiton discolor*, F. Muell. Fragm. i. 1.

N. Australia. Buckland's Table Land, *A. C. Gregory.*
Queensland. Pine river, *Hill.*
N. S. Wales. Clarence and Richmond rivers, *C. Moore, Beckler.*
The specimens I have seen are in leaf only, with loose flowers and fruits.

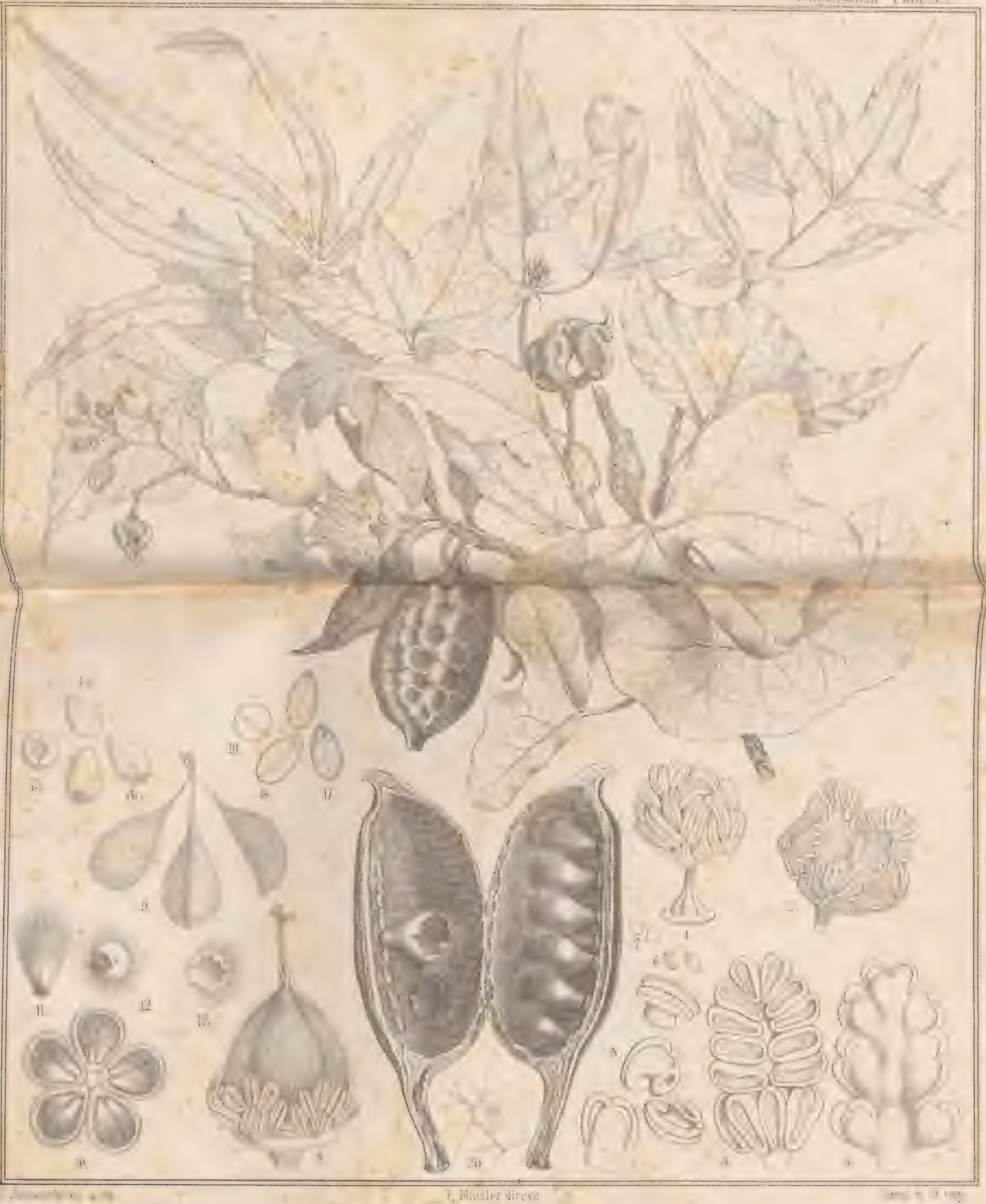
6. **S. incana,** *Benth.* A tree, densely clothed with a close, soft tomentum, very white on the under side of the leaves. Leaves deeply divided into 5 or 7 palmate broadly lanceolate lobes, the larger leaves fully 8 in. diameter. Flowers not known. Follicles sessile, ovoid, shortly acuminate, thick and woody, softly tomentose outside, densely tomentose-hirsute inside as well as the seeds, which however do not appear to cohere as in some species.—*Brachychiton incanum*, R. Br. in Benn. Pl. Jav. Rar. 234; *Sterculia acerifolia*, A. Cunn. in Loud. Hort. Brit. 392 (in part).

W. Australia. Cambridge Gulf, N.W. coast, *A. Cunningham.* The specimens are in leaf and fruit.

7. **S. lurida,** *F. Muell.* A tree. Leaves on long petioles, deeply 5- or 7-lobed, the lobes sinuate or even lobed as in *S. acerifolia*, and of the same size, but softly pubescent, especially underneath. Flowers like those of *S. discolor*, of a livid variegated colour. Calyx campanulate, 1½ to 2 in. long, divided to the middle into broadly ovate lobes, with the margins thin and induplicate. Follicles (according to F. Mueller) shortly stipitate, large, tomentose, many-seeded.—*Brachychiton luridum*, F. Muell. Fragm. i. 1, and ii. 177.

N. S. Wales. Clarence river, *C. Moore.* The specimens I have seen are in leaf, with loose flowers. The real distinctions between *S. ramiflora*, *S. Bidwilli*, *S. discolor*, *S. incana*, and *S. lurida*, which alone enter into the section *Brachychiton* as originally defined by Schott, cannot be well ascertained until we have more complete specimens, with the leaves, flowers, and fruits properly matched. These can only be procured by residents in the country itself, as these organs are generally developed at different seasons.

Supplemental Plate V.



F. Mueller direxit

Brachychiton populneum. R. Br.

8. **S. trichosiphon,** *Benth.* A tree, quite glabrous, leafless when in flower. Leaves 4 to 8 in. long and broad, more or less deeply cut into 5 or rarely 7 palmate lobes, sometimes broad and shortly acuminate, sometimes lanceolate with long points, and glabrous on both sides. Racemes short, mostly simple. Calyx narrow, tubular-campanulate, about ¾ in. long, the lobes lanceolate, spreading, much shorter than the tube. Staminal column swollen and hairy in the middle. Stigma peltate. Follicles shortly stipitate, glabrous, oblong-triangular, 2 to 3 in. long.—*Trichosiphon australe*, Schott, Melet. 34; *Brachychiton platanoides*, R. Br. in Benn. Pl. Jav. Rar. 234.

N. Australia. Abel Tasman river, *F. Mueller;* Nicol Bay, *F. Gregory.*

Queensland. Northumberland Island (*R. Brown*), Burdekin and Suttor and Dawson rivers, *F. Mueller;* Wide Bay, *Bidwill.* The few flowers I have seen were much damaged by insects. I have not seen R. Brown's specimens.

9. **S. acerifolia,** *A. Cunn. in Loud. Hort. Brit* 392 (*partly*). A large timber-tree, quite glabrous. Leaves on long petioles, deeply 5- or 7-lobed; lobes oblong-lanceolate or almost rhomboid, occasionally deeply sinuate, the whole leaf often 8 or 10 in. diameter, thin but shining, and glabrous on both sides. Flowers of a rich red, in loose axillary racemes or small panicles of 2 to 3 in. Calyx broadly campanulate, ¾ in. long, quite glabrous, with short broad lobes, valvate in the bud. Ovary raised on a short column, quite glabrous, the carpels quite distinct, and the styles scarcely cohering at the broad radiating stigmas. Follicles large, on long stalks, quite glabrous.—*Brachychiton acerifolium*, F. Muell. Fragm. i. 1, and ii. 177.

N. S. Wales. Illawarra, *A. Cunningham, M'Arthur,* where it is known by the name of "Flame-tree;" Macleay and Clarence rivers, *Beckler.*

10. **S. diversifolia,** *G. Don, Gen. Syst.* i. 516. A tree of from 20 to 60 ft., quite glabrous except the flowers. Leaves on long petioles, glabrous and shining, either entire and from ovate to ovate-lanceolate, or more or less deeply 3- or rarely 5-lobed, the 2 lateral lobes sometimes very short, sometimes all lanceolate, 2 or 3 in. long, the simple leaves or their lobes always ending in long points. Flowers in axillary panicles, rarely exceeding the leaves. Calyx very broadly campanulate, slightly tomentose when young, attaining when fully out 7 to 9 lines diameter, acutely lobed to the middle, of a yellowish-white and glabrous except the ciliate margins outside, reddish and glabrous within. Staminal column also glabrous. Ovary slightly tomentose. Follicles nearly ovoid, 1½ to 2 or even 3 in. long, thick and glabrous, on stalks of 1 to 2 in., the endocarp and outer coating of the seeds very shortly hirsute and cohering.—*Pœcilodermis populnea*, Schott, Melet. 33; *Brachychiton populneum*, R. Br. in Benn. Pl. Jav. Rar. 234; F. Muell. Pl. Vict. i. 156, and Suppl. 5.

Queensland. Dawson river, *F. Mueller;* Rockhampton, *Thozet;* in the interior, *Mitchell*, according to whom the natives eat the pods.

N. S. Wales. From New England, *C. Stuart*, and Macleay river, *Beckler*, to Twofold Bay, *F. Mueller;* in the interior, *Fraser;* Lachlan river, *A. Cunningham.*

Victoria. Granite ranges on Snowy River and its tributaries, and Hume river, *F. Mueller.*

Var. (?) *occidentalis.* Leaves mostly deeply 3-lobed with narrow lobes, with the addition sometimes of short lateral lobes. Calyx rather smaller and more tomentose than in the eastern form, but not fully out in our specimens, and quite glabrous inside.—*Brachychiton Gregorii*, F. Muell. in Hook. Kew Journ. ix. 199.

W. Australia. Murchison river, *Gregory, Drummond*, 5*th Coll. n.* 93.

11. **S. caudata,** *Heward, in Herb. Cunn.* A tree, quite glabrous except the flowers. Leaves ovate-cordate, entire, long-acuminate, mostly 3 or 4 in. long, the veins more transverse than in any other species, some occasionally narrow-oblong or linear. Flowers rather small, in short axillary panicles, the rachis and pedicels quite glabrous. Calyx broadly campanulate, deeply lobed, 6 to 7 lines diameter when fully out, very tomentose outside, pubescent inside especially at the bottom, but without appendages. Staminal column slender in the males, short in the females, pubescent at the base. Ovary very tomentose. Follicles glabrous, ovoid, rather large and thick, almost sessile.—*Brachychiton diversifolium*, R. Br. in Benn. Pl. Jav. Rar. 234.

N. Australia. Careening Bay, N.W. coast, *A. Cunningham*; Victoria river and Point Pearce, *F. Mueller*. I have been unable to retain R. Brown's specific name, which had been previously applied by G. Don to the last species.

12. **S. rupestris,** *Benth.* A considerable tree, the trunk often swelling out to a large size, contracted at the top and bottom. Leaves quite glabrous, either quite entire, oblong-linear or lanceolate, 3 to 6 in. long, or digitate, consisting of 5 to 9 linear-lanceolate sessile leaflets, often above 6 in. long. Panicle tomentose, usually longer than the petioles. Calyx about 4 lines long, campanulate, deeply lobed, tomentose both inside and out. Staminal column short, hirsute at the base. Follicles ovoid, acuminate, about 1 in. long, on stalks longer than themselves. Seeds, when deprived of the outer coating which remains adherent to the endocarp, smooth and shining, marked with a large scar at the chalazal end, but the radicle in those I have opened always next to the true hilum.—*Delabechea rupestris*, Lindl. in Mitch. Trop. Austr. 155; *Brachychiton Delabechii*, F. Muell. Pl. Vict. i. 157.

Queensland. Isolated summits of the Grafton range, *Mitchell*; Wide Bay, *Bidwill*; Dawson, Mackenzie, and Barnett rivers, Rockhampton and Peak Downs, *F. Mueller*. The colonists give it the name of "Bottle-tree," on account of the singular shape the trunk often assumes. The digitate leaves appear to grow on luxuriant barren branches, for I have never seen them on flowering specimens.

2. TARRIETIA, Blume.

(Argyrodendron, *F. Muell.*)

Flowers unisexual. Calyx 5-cleft. Petals none. Staminal column short, adnate to the gynophore, bearing at the summit 10 to 15 anthers irregularly clustered in a head. Carpels of the ovary 3 to 5, nearly distinct, 1-ovulate rarely 2-ovulate. Styles as many, shortly filiform, stigmatic on the inner edge. Fruit-carpels or samaras distinct, spreading, indehiscent, produced at the back into a wing. Seed oblong, albumen splitting in two, cotyledons flat.—Tall trees. Leaves digitately compound, glabrous or scurfy. Flowers small and numerous, in axillary or lateral panicles.

Besides the Australian species, which is endemic, there is another from the Indian Archipelago.

1. **T. argyrodendron,** *Benth.* A tall tree, glabrous except minute scurfy scales on the young shoots and inflorescence, and often on the under

side of the leaves. Leaflets 3, or on the younger trees often 5, petiolulate, oblong or lanceolate, obtuse or acuminate, 3 to 4 in. long, coriaceous. Panicles dichotomous, the upper ones sometimes exceeding the leaves. Flowers very numerous. Calyx broadly campanulate, about 3 lines diameter. Carpels with a semiorbicular wing about 1 in. long.—*Argyrodendron trifoliolatum*, F. Muell. Fragm. i. 2, ii. 177.

Queensland. Common in shady woods on the Brisbane, *A. Cunningham*; Pine river, *W. Hill*.

N. S. Wales. Richmond and Clarence rivers, *C. Moore*.

The timber of this tree is said to be hard, and valuable for building. The flowers in the Japanese species are much smaller and more numerous, but the structure is the same, its carpels having a wing of 2 to 3 in.

Var. *grandiflora*. Calyx 4 lines diameter. Stigmas short and broad. Port Denison, *Fitzalan*.

3. HERITIERA, Ait.

Flowers unisexual. Calyx 5-toothed or 5-cleft. Petals none. Staminal column slender, bearing on the outside below the summit a ring of 5 anthers with parallel cells. Carpels of the ovary 5, nearly distinct, 1-ovulate; style short, with 5 rather thick stigmas. Fruit-carpels woody, indehiscent, keeled or almost winged on the back. Seeds without albumen, cotyledons very thick, the radicle next the hilum.—Trees. Leaves undivided, coriaceous, scurfy underneath, penninerved. Flowers small, in axillary panicles.

The genus consists of two tropical Asiatic seacoast trees, of which the one extending to Australia has the widest range.

1. **H. littoralis,** *Ait.; DC. Prod.* i. 484. A tree, attaining a considerable size. Leaves very shortly petiolate, oval or oblong, the larger ones fully 8 in. by 4, but often much smaller, quite entire, coriaceous, glabrous above, silvery underneath with a close scaly tomentum. Flowers small, numerous, in loose tomentose panicles in the upper axils much shorter than the leaves. Calyx about 2 lines long. Staminal column in the males, pistil in the females, much shorter than the calyx. Fruit carpels sessile, ovoid, 2 to 3 in. long, thick and almost woody, with a slightly projecting inner edge, and a strong, projecting, almost winged keel along the outer edge.

Queensland. N.E. coast, *A. Cunningham*. Widely dispersed over the seacoasts of tropical Asia.

4. HELICTERES, Linn.

(Methorium, *Schott.*)

Calyx tubular, 5-cleft at the top, often oblique. Petals 5, equal or the 2 upper ones broader, the claws elongated, and all or two of them often with a lateral appendage. Staminal column adnate to the gynophore, truncate at the top, or more frequently bearing 5 teeth or small lobes (staminodia), with 1 or 2 stipitate anthers between each, anther-cells divaricate, often confluent into one. Ovary nearly sessile on the top of the staminal column, 5-lobed, 5-celled, with several ovules in each cell. Styles 5, subulate, more or less connate, slightly thickened and stigmatic at the top. Fruit-carpels distinct or separating, opening along their inner edge, straight or spirally twisted. Seeds with little albumen, cotyledons leafy, folded round the radicle.—Trees or shrubs, with stellate or branched tomentum. Leaves entire, serrate or obscurely lobed. Flowers axillary, solitary or clustered. Bracteoles none or distant from the calyx. Capsules usually tomentose, the clusters of tomentum often forming long woolly processes. The appendages on the claws of the petals appear to vary in different flowers of the same species.

A considerable genus, dispersed over the tropical regions both of the New and the Old World, but chiefly American. Of the Australian species one is a common Asiatic one, the two others endemic. The frequently unilocular anthers closely connect the genus with *Malvaceæ*. The other characters are however more of *Sterculiaceæ*, and in some species the anthers are distinctly bilocular.

Calyx ½ in. long. Carpels spirally twisted . . . . 1. *H. Isora.*
Calyx not above 2 lines long. Carpels straight.
  Leaves obtuse, entire . . . . 2. *H. cana.*
  Leaves toothed, mostly acute . . . . 3. *H. dentata.*

1. **H. Isora,** *Linn.; DC. Prod.* i. 475. A shrub or small tree, with a rather rough stellate pubescence. Leaves on short petioles, broadly obovate or orbicular, often oblique, irregularly toothed or the lower ones obscurely 3-lobed, mostly about 4 in. long, scabrous above, more or less tomentose underneath or sprinkled with short stellate hairs. Pedicels short, usually 2 or 3 together. Calyx ½ in. long or rather longer, obliquely and unequally 5-toothed. Petals red, twice as long as the calyx, 2 of them much broader than the 3 others. Anthers 10, on short filaments, alternating in pairs with the linear staminodia round the ovary. Fruit about 1 in. long, on a stalk of 1½ to 2 in., slightly tomentose, the carpels spirally twisted.—Wight, Ic. t. 180; Bot. Mag. t. 2061.

N. Australia. Roper river, *F. Mueller*. Common in East India and the Archipelago.

2. **H. cana,** *Benth.* A shrub, densely clothed with a short, soft or velvety whitish tomentum. Leaves on short petioles, oval or oval-oblong, obtuse, 1½ to 2½ in. long, entire or very obscurely toothed towards the top. Flowers small, in very short axillary sessile cymes or clusters. Calyx about 2 lines long, with short acute teeth. Petals not twice as long, nearly equal or the upper ones rather broader. Anthers 10, small, the filaments rather long, alternating in pairs with the shorter ovate, very thin and transparent staminodia. Fruit ovoid, under ½ in. long, on a stalk of about 2 lines, loosely woolly, the carpels straight.—*Methorium canum*, Schott, Meletem. 29, t. 5; *M. integrifolium*, F. Muell. Trans. Phil. Soc. Vict. iii. 40.

N. Australia. Brunswick Bay and York Sound, *A. Cunningham*; Upper Victoria river, *F. Mueller*.

3. **H. dentata,** *F. Muell. Herb.* Apparently a small shrub or undershrub, the slender branches, inflorescence, and under side of the leaves whitish with a close stellate tomentum. Leaves shortly petiolate, from orbicular to ovate or oblong-elliptical, rather acute, rarely exceeding 1 in., more or less toothed, greener and less tomentose above than underneath. Flowers pink or purple, rather smaller, more numerous, and in looser cymes than in *H. cana*. Calyx rarely attaining 2 lines. Petals and stamens as in *H. cana*, but the staminodia much shorter and broader, and exceedingly delicate. Fruit small, with straight carpels.

N. Australia. Upper Victoria river, *F. Mueller*.

Var. *procumbens.* Branches procumbent, ½ to 2 ft. long; tomentum looser; leaves smaller and rounder, velvety-villous on the upper side; staminodia longer. Macadam range, *F. Mueller.*

Var. (?) *flagellaris.* Branches prostrate, 1 to 2 ft. long; leaves nearly sessile, cordate or orbicular, 1 to 1½ in. long; cymes on long slender peduncles. Port Essington, *Armstrong.*

5. PTEROSPERMUM, Schreb.

Bracteoles 3, entire or laciniate, sometimes very deciduous, or perhaps none. Calyx tubular, 5-cleft, deciduous. Petals 5, often very long, deciduous. Staminal column adnate to the gynophore, divided at the top into 5 linear-clavate staminodia, with 3 stipitate anthers between each; anther-cells linear, parallel. Ovary sessile in the top of the column, 5-celled with several ovules in each cell. Style undivided, club-shaped, and 5-furrowed at the top. Capsule woody or coriaceous, ovoid or oblong, terete or angular, opening loculicidally in 5 valves. Seeds ascending, produced into a wing at the top; albumen little or none; cotyledons wrinkled or folded; radicle inferior, rather long.—Trees or shrubs, clothed with a stellate tomentum or scurfy scales. Leaves coriaceous, often oblique, entire, cuneate-toothed or angled at the upper end, penninerved or several-nerved at the base. Peduncles short, axillary, 1-flowered. Flowers often several inches long.

The genus is limited to East India and the Archipelago, the Australian species being probably the same as one of the Asiatic ones.

1. **P. acerifolium,** *Willd.; W. and Arn. Prod.* 69? I have seen a fragment only in very young bud, which agrees with this species in the very angular rusty-tomentose young calyx, and in the bracteoles divided into narrow-linear lobes, and falling off at a very early stage. There are 3 leaves only, the largest is, as in *P. acerifolium*, coriaceous, broad at the end, cordate at the base, nearly glabrous above, tomentose underneath, with about 11 prominent nerves radiating from the petiole; but it is much narrower than usual in that species, measuring 9 in. by 4. The 2 others are as yet not half developed, but are broader in proportion, and although the specimen is insufficient for identification, it shows no character to separate it from *P. acerifolium.*—Wight, Ic. t. 631.

N. S. Wales. Illawarra? *Vernon* (*Herb. F. Mueller*).

6. MELHANIA, Forsk.

Bracteoles 3, persistent. Calyx divided almost to the base into 5 segments. Petals 5, persistent. Staminal cup very short, bearing 5 ligulate staminodia, and 5 stipitate anthers alternating with them, the anther-cells parallel. Ovary sessile, 5-celled with 1 or more ovules in each cell. Style usually short, with 5 subulate branches, stigmatic along the inner side. Capsule opening loculicidally in 5 valves. Seeds with albumen; cotyledons folded, 2-cleft; radicle inferior.—Herbs, undershrubs, or small shrubs, softly tomentose. Leaves ovate or cordate, serrate-crenate. Peduncles axillary, 1- or few-flowered. Bracteoles often exceeding the calyx. Flowers yellow.

The genus extends over the tropical and subtropical regions of the Old World, but is most abundant in Africa. The Australian species is the same as an Indian one. The habit is that of some *Malvaceæ.*

1. **M. incana,** *Heyne; W. and Arn. Prod.* 68. A rather slender shrub of 1 or several ft., hoary or white except the upper side of the leaves with a close or velvety tomentum. Leaves shortly petiolate, oblong or ovate-lanceolate, obtuse, scarcely toothed, 1 to 2 or even 3 in. long, tomentose on both sides, or nearly glabrous above. Peduncles bearing 1, 2 or rarely 3 or 4 flowers, the pedicels very short. Bracteoles narrow-linear or subulate, rather shorter than the calyx. Sepals lanceolate-subulate, tomentose, about 4 to 6 lines long. Petals rather longer, broad, yellow. Staminodia linear, often 3 lines long; anthers shorter, linear, on short filaments. Style elongated. Capsule tomentose, shorter than the calyx, with 2 or 3 seeds in each cell.—*M. oblongifolia*, F. Muell. Fragm. i. 69.

N. Australia. York Sound, Cygnet Bay, and Dampier's Archipelago, *A. Cunningham;* Upper Victoria river and Sturt's Creek, *F. Mueller;* islands of the Gulf of Carpentaria, *R. Brown;* Albert river, *Henne.*

Queensland. Broad Sound, *R. Brown;* Rockhampton and Burdekin rivers, *F. Mueller;* Port Curtis, *M'Gillivray;* Port Denison, *Fitzalan.*

The species is also found in the East Indian peninsula, and a slight variety or closely allied species in tropical Africa.

7. MELOCHIA, Linn.

(Riedleia, *Vent.*)

Calyx 5-lobed or 5-toothed, campanulate or inflated. Petals 5, spathulate or oblong. Stamens 5, united at the base, without any or with very minute tooth-like intervening staminodia; anther-cells parallel. Ovary sessile or shortly stipitate, 5-celled with 2 ovules in each cell, styles 5, free, or united at the base, often thickened at the stigmatic top. Capsule opening loculicidally in 5 or fewer valves, some of the cells occasionally abortive. Seeds usually solitary in each cell, ascending, with more or less of albumen; embryo straight, with flat cotyledons.—Herbs, shrubs, or rarely trees, the stellate tomentum occasionally mixed with spreading hairs. Leaves serrate. Flowers small, axillary or terminal, clustered or in cymes or panicles.

A large genus, dispersed over the warmer regions of the globe, the herbaceous and suffruticose species chiefly American. The two Australian species are both herbaceous; one belongs to the American series, the other is Asiatic.

Capsule very angular, pyramidal, much longer than the calyx . . . 1. *M. pyramidata.*
Capsule small, globular . . . . 2. *M. corchorifolia.*

1. **M. pyramidata,** *Linn.; DC. Prod.* i. 490. Herbaceous, with a hard almost woody base, although sometimes annual only. Branches slender, divaricate, often 2 or 3 ft. long, slightly pubescent in a decurrent line or all over. Leaves petiolate, lanceolate, or the lower ones ovate, the larger ones 1 to 2 in. long, serrate, usually glabrous. Flowers small, purplish, 2 to 4 together in little almost sessile axillary umbels. Calyx 10-ribbed. Petals about 2 lines long. Capsule 3 to 4 lines long, acuminate, the very prominent angles produced into short horizontal points, giving each valve a rhomboidal, and the whole capsule a pyramidal shape.—A. Gray, Gen. Ill. t. 134.

N. Australia. Victoria river, *F. Mueller.*

Queensland. Rockhampton, *Wallace.*

The species is very generally distributed over tropical America, and occurs also in E. Africa, the Mauritius, and the Pacific islands.

2. **M. corchorifolia,** *Linn. Spec.* 944. Herbaceous, with the habit of *M. pyramidata*, but usually more erect, glabrous or with slightly pubescent decurrent lines. Leaves petiolate, from broadly ovate to lanceolate, mostly 1 to 2 in. long, serrate or crenate, glabrous. Flowers small, purplish, nearly sessile in clusters, usually several together in a broad, terminal, sessile cyme, rarely a few smaller clusters in the upper axils. Calyx 5-angled. Petals about 2 lines long. Capsule small, depressed-globular, with scarcely prominent angles, sprinkled with a few hairs, the valves very rarely splitting septicidally. —*Riedleia corchorifolia*, DC. Prod. i. 491; W. and Arn. Prod. i. 66.

N. Australia. Port Essington, *Armstrong*; Sturt's Creek and Macadam range, *F. Mueller*.

The species is common in E. India, and includes *M. concatenata*, Linn., and *M. supina*, Linn., with all the synonyms referred to these plants respectively by Wight and Arnott (l. c., under *Riedleia*). Some of the Australian specimens are much starved, with small, occasionally axillary, heads of flowers, apparently approaching *M. nodiflora*, Sw., another widespread tropical species, which however not only has all the flowers in axillary clusters, but the capsule is much more deeply furrowed, and usually septicidal as well as loculicidal, the carpels often entirely separating.

8. DICARPIDIUM, F. Muell.

Calyx 5-lobed. Petals oblong-spathulate, persistent. Stamens 5, very shortly united at the base, without intervening staminodia, anther-cells parallel. Ovary sessile, 2-celled with 2 ovules in each cell; styles 2, distinct, thickened upwards. Fruit-carpels separating, 2-valved, with 1 or 2 seeds in each. Seeds ascending; albumen fleshy; embryo straight, with flat cotyledons.—An undershrub, with the habit of *Waltheria*, from which the genus only differs in the carpels, two instead of one. The flowers are also more or less unisexual, but that is perhaps sometimes the case in *Waltheria*.

The genus is limited to the single Australian species.

1. **D. monoicum,** *F. Muell. in Hook. Kew Journ.* ix. 302. An undershrub of 1 to 2 ft., hirsute all over with rigid stellate hairs, the branches rather slender, diffuse or erect. Leaves nearly sessile, oblong, mostly about 1 in. long, toothed, plicate, and densely hirsute. Flowers small, almost sessile, solitary, or 2 or 3 together in the upper axils, each within a bract and 2 bracteoles, the males with small carpels and short styles, the ovules, although apparently perfect, not setting; the female flowers rather smaller, with smaller anthers, but perfecting their fruit. Carpels small, tomentose.

N. Australia. Macarthur river and Seven Emu creek, *F. Mueller*.

9. WALTHERIA, Linn.

Calyx 5-lobed. Petals 5, spathulate, persistent. Stamens 5, united at the base, without intervening staminodia; anther-cells parallel. Ovary sessile, consisting of a single 1-locular, 2-ovulate carpel, style excentrical, thickened or fringed upwards. Capsule 2-valved, 1-seeded. Seed ascending, albumen fleshy; embryo straight, cotyledons flat.—Herbs, undershrubs, or rarely trees, the stellate tomentum usually mixed with spreading hairs.

Leaves serrate. Stipules narrow. Flowers usually small, axillary or terminal in clusters, heads, cymes, or panicles.

The species are mostly American, two are African, and two from the Pacific islands. The Australian species is one which is very generally dispersed over the tropical regions of both the Old World and the New.

1. **W. americana,** *Linn.; DC. Prod.* i. 492. A perennial or undershrub, 1 to 2 ft. or more high, densely tomentose or softly villous in every part. Leaves shortly petiolate, from ovate to oblong, 1 to 1½ in. long, obtuse, toothed and plicately veined. Flowers small, yellow, in dense heads, almost sessile in the axils of the leaves, or the upper ones clustered in a short spike, or irregularly collected into dense cymes or leafy corymbs. Bracts narrow. Calyx 1½ to 2 lines long. Petals nearly twice as long, narrow.—*W. indica*, Linn.; DC. Prod. i. 493.

N. Australia. Cambridge Gulf, *A. Cunningham;* Victoria river and Arnhem's Land, *F. Mueller*; Port Essington, *Armstrong;* Gulf of Carpentaria, *R. Brown, Landsborough.*
Queensland. Cape Flinders, *A. Cunningham;* Port Denison, *Fitzalan.*
The species is common within or near the tropics all round the globe.

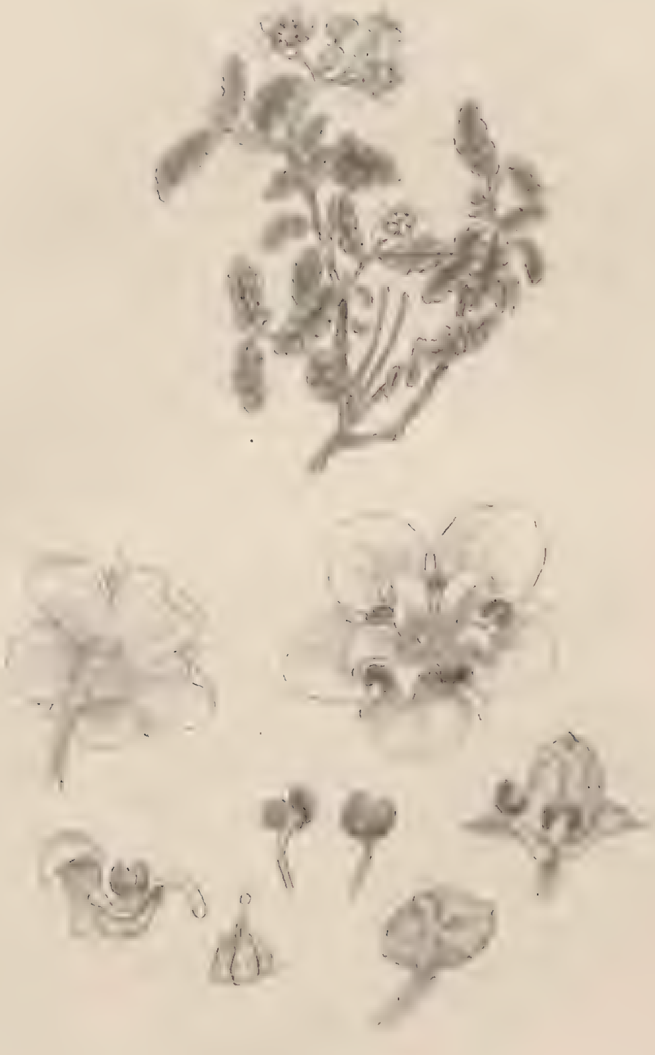
10. ABROMA, Jacq.

Calyx 5-cleft. Petals 5, the claw dilated and concave at the base, the lamina stipitate, ovate, plane. Staminal cup with 5 obcordate lobes (staminodia) alternating with the petals, anthers 2 to 4 in each sinus, nearly sessile, with divaricate cells. Ovary sessile, 5-celled with several ovules in each cell; styles 5, short, connivent. Capsule membranous, truncate, 5-angled, the angles winged and produced at the top into as many horn-like points, opening at the top loculicidally and septicidally. Seeds several, albuminous; embryo straight, with flat cotyledons.—Tall shrubs or small trees, with stellate pubescence. Leaves entire or palmately lobed. Peduncles leaf-opposed or terminal, few-flowered. Dissepiments of the capsule fringed at the inner edge with long hairs.

A genus of two or three species from tropical Asia, one of them the same as the Australian one.

1. **A. fastuosa,** *R. Br.; DC. Prod.* i. 485. A tall shrub, the branches softly pubescent, and bearing a few minute conical prickles. Leaves shortly petiolate, obliquely cordate-ovate, acuminate, 4 to 6 in. long, undivided, slightly sinuate-toothed, nearly glabrous above, softly pubescent underneath. Peduncles very much shorter than the leaves, bearing a cluster of 3 to 5 shortly pedicellate flowers, one only usually fertile. Bracts linear, deciduous. Sepals narrow-lanceolate, about ½ in. long. Petals rather exceeding them, the broadly ovate lamina supported above the concave base by a filiform stipes. Capsule hirsute with a few rigid hairs, or at length glabrous, 1½ in. long, the wings of the angles nearly ½ in. broad, besides the long incurved points of their upper angle. Seeds 10 to 12 in each cell.—Gærtn. Fr. i. t. 64; Salisb. Parad. Lond. t. 102.

Queensland. Endeavour river, *R. Brown* (*Hb. R. Br.*).
The species is widely distributed over the Eastern Archipelago.



[illegible]

11. RULINGIA, R. Br.

(Achilleopsis, *Turcz.*)

Calyx 5-lobed. Petals 5, broad and concave or convolute at the base, with a small, broad, or linear ligula at the top. Stamens shortly or scarcely connate at the base, 5 without anthers (staminodia), linear-lanceolate and petal-like, alternate with the petals and connivent or spreading; 5 short, opposite the petals, and perfect, the anther-cells parallel. Ovary sessile, 5-celled with 2 or rarely 3 ovules in each cell, styles connate, at least at the top, or rarely quite free. Capsule tomentose or beset with prickles or soft setæ, opening loculicidally in valves, or the carpels separating. Seeds 1 or 2 in each cell or carpel, ascending, usually strophiolate. Albumen fleshy; cotyledons flat. Shrubs or undershrubs, with stellate tomentum or hairs. Leaves entire, toothed, or lobed. Stipules narrow, deciduous, the upper ones often laciniate. Flowers mostly white, small, in leaf-opposed or terminal, rarely axillary cymes. Petals shorter than the calyx. Strophiola of the seeds small, variable in shape in the same species.

The genus is confined to Australia, with the exception of one Madagascar species.

A. *Leaves of the flowering branches or their lobes lanceolate or ovate-lanceolate, mostly above* 1 *and often* 2 *or* 3 *in. long, entire or serrate, not undulate, crenate or crisped. Capsule loculicidal.*

Leaves or their lobes quite entire, softly hoary-tomentose . . . 1. *R. salvifolia.*
Leaves or their lobes serrate, velvety or hirsute, at least underneath.
Capsule scarcely dehiscent, nearly glabrous, with rigid prickly setæ . . . . 2. *R. pannosa.*
Capsule dehiscent, tomentose with soft pubescent setæ . . . 3. *R. rugosa.*

B. *Leaves ovate or oblong, irregularly crenate or lobed, often undulate or crisped, mostly above* 1 *in. and often* 2 *or* 3 *in. long. Calyx very prominently angled in the bud* (*except* R. loxophylla). *Capsule loculicidal and often septicidal also.*

Buds obtuse.
Petals gibbous at the base, abruptly ligulate. Leaves glabrous or pubescent above.
Calyx-lobes erect or connivent. Leaves large, little lobed . . 4. *R. corylifolia.*
Calyx-lobes rounded, very spreading. Leaves smaller, much-lobed . . . . 7. *R. platycalyx.*
Petals not gibbous, tapering into a short linear ligula. Leaves little-lobed, hoary-tomentose . . . . 5. *R. grandiflora.*
Petals not gibbous. Ligula short, oblong-spathulate. Leaves oblique, densely velvety . . . . 10. *R. loxophylla.*
Buds acute. Petals tapering into a slender ligula about as long as the calyx. Leaves much-lobed, often crisped, nearly glabrous or pubescent above . . . . 6. *R. malvæfolia.*

C. *Leaves* (*except* R. loxophylla) *crenate, more or less undulate, and crisped or bullate, but little lobed, and rarely exceeding* 1 *in. Buds small, scarcely angular. Capsule loculicidal, sometimes also septicidal, or the carpels separating.*

Cymes pedunculate. Leaves glabrous or scabrous above.
Buds acute. Ligules long and slender . . . . 6. *R. malvæfolia.*
Buds obtuse.
Leaves narrow-oblong and crenate, or, when luxuriant, ovate-lanceolate and slightly lobed . . . . 9. *R. hermanniæfolia.*
Leaves mostly ovate and lobed.
Calyx about 3 lines diameter. Petals not gibbous at the base . . . . 8. *R. parviflora.*

Calyx 5 or 6 lines diameter, lobes very broad. Petals gibbous at the base . . . . 7. *R. platycalyx.*
Cymes sessile or nearly so. Leaves hoary-tomentose or velvety on both sides.
Leaves very oblique, densely velvety, ¾ to 2 in. Ligules of the petals shortly oblong . . . . 10. *R. loxophylla.*
Leaves small, hoary-tomentose.
Ligules linear, rather broad. Leaves ½ to 1 in. . . . . . . 11. *R. cuneata.*
Ligules obovate or spathulate. Leaves under ½ in. . . . . . 12. *R. rotundifolia.*

D. *Leaves pinnatifid. Flowers in dense terminal corymbose cymes. Carpels separating, crested on the back.* (**Achilleopsis**, *Turcz.*) . . . . 13. *R. densiflora.*

1. **R. salvifolia,** *Benth.* An apparently erect shrub, clothed with a soft but dense and close whitish tomentum. Leaves on very short petioles, lanceolate or lanceolate-linear, 2 to 4 in. long, entire or deeply divided into 3 lanceolate lobes, the middle one the longest, all quite entire and softly tomentose on both sides, especially underneath. Cymes pedunculate, but shorter than the leaves. Calyx spreading, about 3 lines diameter. Ligula of the petals linear, usually pubescent. Stamens very shortly united. Fruit not seen.—*Thomasia (?) salvifolia*, A. Cunn. Herb.; Steetz, in Pl. Preiss. ii. 333.

Queensland. Brisbane river, *A. Cunningham;* Minto's Craig, *Fraser.*

2. **R. pannosa,** *R. Br. in Bot. Mag. t.* 2191. A shrub of several feet, but flowering young so as to appear an undershrub, softly hirsute with velvety stellate hairs. Leaves on the full-grown plant shortly petiolate, ovate-lanceolate or lanceolate, mostly 2 to 3 in. or sometimes longer, toothed, rounded or cordate at the base, scabrous-pubescent above, with impressed veins, densely velvety or hirsute underneath; on the younger plants they are broader and often 3 or 5-lobed. Cymes shortly pedunculate. Calyx tomentose, spreading to 3 or 4 lines diameter. Ligula of the petals linear, rather short. Staminodia pubescent, united with the perfect stamens higher up than in most species. Ovary glabrous, granulate. Capsule nearly glabrous, globular, hard and almost indehiscent, beset with rigid subulate bristles, glabrous except a stellate tuft at the tip.—Steetz, in Pl. Preiss. ii. 351; F. Muell. Pl. Vict. i. 150; *Commersonia dasyphylla*, Andr. Bot. Rep. t. 603; *Buettneria dasyphylla*, J. Gay, in DC. Prod. i. 486, and in Mem. Mus. Par. x. 200, t. 12; *B. pannosa*, DC. Prod. i. 486.

Queensland. Glasshouses, Moreton Bay, *F. Mueller.*

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 217, and *Fl. Mixt. n.* 546, and others; northward to Clarence and Hastings rivers, *Beckler;* and New England, *C. Stuart;* southward to Twofold Bay, *F. Mueller.*

Victoria. Amongst granite boulders in the Buffalo range, and near Mount Imlay, *F. Mueller.*

3. **R. rugosa,** *Steetz, in Pl. Preiss.* ii. 352. A shrub, so closely resembling *R. pannosa* in indumentum, foliage, and apparently in flowers, that it is difficult to distinguish it without the fruit. Leaves usually narrower, more rugose, and almost bullate. Flowers (which I have only seen very young) fewer in the cymes. Ovary tomentose. Capsule about 4 lines diameter without the setæ, not so hard as in *R. pannosa* and readily dehiscent, beset

with soft pubescent setæ, which are long in Cunningham's specimens, shorter in Stuart's.

N. S. Wales. Wellington Valley and to the westward, *A. Cunningham*; New England, *C. Stuart.*

4. **R. corylifolia,** *Grah. in Bot. Mag. t.* 3182. An erect shrub, roughly tomentose-villous with stellate hairs. Leaves broadly ovate, 2 to 3 in. long, irregularly toothed or broadly lobed, wrinkled, green and roughly pubescent above, more densely tomentose-villous or pubescent underneath. Cymes dense and sessile, forming dense terminal leafy corymbs. Bracts and stipules lanceolate. Calyx prominently 5-angled, villous, deeply lobed, the segments about 4 lines long, erect or connivent. Petals gibbous at the base, the margins of the erect broad part involute, but not united above their attachment as represented by mistake in the plate, the ligula linear, rather short. Stamens shortly united. Ovary prominently 5-angled, styles quite distinct. Capsule depressed-globular, 5-furrowed, covered with rigid stellate hairs, deeply loculicidal and sometimes septicidal also.—Steetz, in Pl. Preiss. ii. 358; *Commersonia Preissii,* Steud. in Pl. Preiss. i. 237.

W. Australia. King George's Sound, *R. Brown, A. Cunningham, Drummond, Preiss, n.* 1652, and others; *Leschenault, Oldfield.*

5. **R. grandiflora,** *Endl. in Hueg. Enum.* 12. A shrub or undershrub of 2 or 3 ft., clothed with a whitish, close or velvety tomentum. Leaves broadly or narrow-ovate, obtuse, mostly 1½ to 2 in. long, irregularly toothed or slightly lobed, tomentose on both sides but whiter underneath. Cymes dense and nearly sessile, but not so much so as in *R. corylifolia.* Calyx prominently angled, scarcely spreading, tomentose. Petals concave at the base, but not gibbous, more gradually narrowed into the ligula than in most species. Staminodia and stamens very short. Capsule globose, longer than the calyx, 4 to 5 lines diameter, densely hirsute with stellate hairs borne on very short setæ, the cells or carpels usually 2-seeded.—Steetz, in Pl. Preiss. ii. 355; *R. althææfolia,* Turcz. in Bull. Mosc. 1852, ii. 151; *Commersonia cinerea,* Steud. in Pl. Preiss. i. 238.

W. Australia. King George's Sound, *Menzies, Huegel, Drummond, n.* 268, etc. Perongerup ranges and road to Cape Riche, *Maxwell, Preiss, n.* 1664.

6. **R. malvæfolia,** *Steetz, in Pl. Preiss.* ii. 356. A low diffuse or ascending shrub or undershrub, resembling *R. platycalyx* and the larger specimens of *R. parviflora,* but readily known by the calyx and petals. Leaves ovate or rarely oblong, obtuse, ¾ to 1½ in. or even 2 in. long, mostly 3- or 5-lobed, the lateral lobes short, all coarsely crenate or obtusely lobed and often undulate or crisped, glabrous or pubescent above, more or less hirsute underneath as well as the branches. Cymes shortly pedunculate. Buds angular and rather acute. Calyx spreading to at least 4 lines diameter, the lobes very acute, hairy outside especially at the base. Petals with a very short broad base, tapering into a very narrow ligula nearly or quite as long as the calyx. Capsule rather large, beset with long glandular-hairy setæ.—*Commersonia cygnorum,* Steud. in Pl. Preiss. i. 237.

W. Australia. Swan River, and to the northward, *Drummond, Preiss, n.* 1612; also King George's Sound, *Menzies, Oldfield* (a narrow-leaved variety).

7. **R. platycalyx,** *Benth.* Shrubby and apparently diffuse, the branches hirsute-tomentose with rigid stellate hairs. Leaves broadly ovate, mostly under 1 in. long and deeply 3-lobed, the lobes crenate or almost pinnatifid, undulate and often crisped, glabrous or scabrous-pubescent above, tomentose and hirsute underneath. Cymes pedunculate. Buds obtuse, slightly angular. Calyx spreading to 5 or 6 lines diameter, the lobes broad and very obtuse. Petals gibbous at the base, almost as in *R. corylifolia*, the ligula linear, rather short. Capsule densely beset with short hirsute setæ, but not seen fully ripe.

W. Australia, *Drummond, 5th Coll. n.* 269.

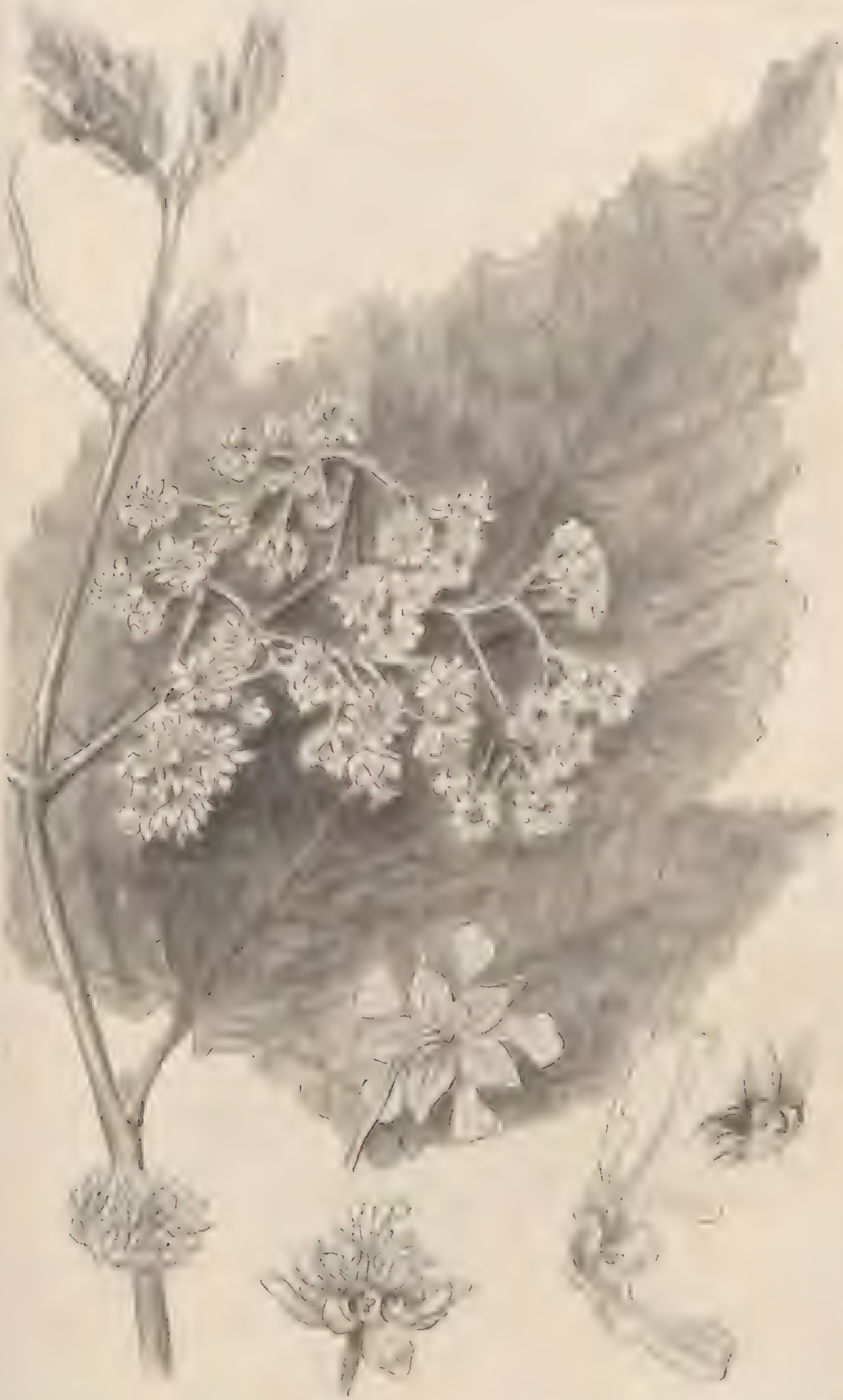
8. **R. parviflora,** *Endl. in Hueg. Enum.* 12. A low shrub or undershrub, with prostrate or ascending branches of ½ to 1½ ft., the young ones hirsute with stellate hairs. Leaves very shortly petiolate, ovate or ovate-lanceolate, obtuse, rarely 1 in. long, deeply crenate and mostly lobed, with undulate often crisped margins, glabrous or nearly so above, tomentose or hirsute underneath. Cymes shortly pedunculate. Buds small, obtuse, scarcely angular. Calyx spreading to about 3 lines, hirsute outside especially at the base, the lobes obtuse. Petals broad and very open at the base, with a rather long ligula, yet much shorter than in *R. malvæfolia*. Capsule about 2 lines diameter, slightly hirsute, with stellate hairs on very short setæ.—Steetz, in Pl. Preiss. ii. 356; *R. corylifolia*, Steud. in Pl. Preiss. i. 237, not Grah.; *R. nana*, Turcz. in Bull. Mosc. 1852, ii. 150.

W. Australia. King George's Sound, *Menzies, Huegel, Drummond, n.* 270, *Preiss, n.* 1650, and others. Readily distinguished from the last two, of which it has nearly the foliage, by the calyx and petals; it is much more nearly allied in character to the eastern *R. hermanniæfolia*, from which the chief differences consist in habit and foliage difficult to describe in words.

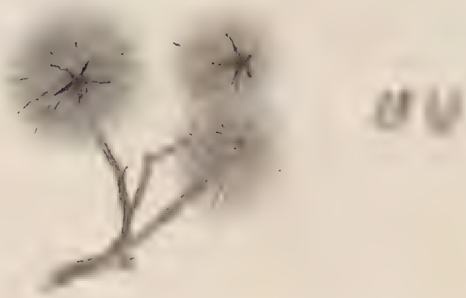
9. **R. hermanniæfolia,** *Steetz, in Pl. Preiss.* ii. 353. A shrub, often of several ft., with slender but rigid divaricate branches, hirsute when young but soon nearly glabrous. Leaves in most specimens narrow-oblong and not above ½ in. long, in more luxuriant ones often ovate-lanceolate, or with short broad basal lobes, always obtuse, crenate, much wrinkled with revolute margins of a firm consistence, at length glabrous above, white-tomentose underneath. In young plants the leaves are often broader and more lobed. Cymes shortly pedunculate. Buds small, obtuse, scarcely angular. Calyx tomentose, opening to nearly 3 lines diameter. Petals broad and open at the base, the ligula linear, rather short. Capsule 2 or rarely 3 lines diameter, pubescent and densely beset with very short hirsute setæ.—*Buettneria hermanniæfolia*, J. Gay, in DC. Prod. i. 486, and Mem. Mus. Par. x. 204, t. 13; *Rulingia cristifolia*, A. Cunn. Herb., (usually miswritten *cistifolia*); Steetz, in Pl. Preiss. ii. 354; *R. oblongifolia*, Steetz, l. c. 353; *Lasiopetalum dumosum*, Lodd. Bot. Cab. t. 1564.

N. S. Wales. Port Jackson, *R. Brown, Backhouse*, and others; Hunter's River, *Paterson, A. Cunningham.*

10. **R. loxophylla,** *F. Muell. Fragm.* i. 68. An erect shrub of 1½ ft., densely velvety tomentose, almost hirsute. Leaves obliquely ovate or cordate, obtuse, ¾ to 2 in. long, crenate, soft and thick, the tomentum rather harsh on the upper side, very dense and whitish underneath. Cymes small, sessile or



MAPLE



nearly so. Calyx tomentose inside and out, spreading to about 2 lines diameter, the lobes acute. Petals broad, concave, with an oblong rather short ligula. Staminodia glabrous. Fruit not seen.

N. Australia. Table land between Victoria river and Hooker's and Sturt's Creeks, *F. Mueller.*

11. **R. cuneata,** *Turcz. in. Bull. Mosc.* 1852, ii. 151. A low shrub or undershrub, with prostrate or ascending branches of ½ to 2 ft. or rather more, whitish with a close tomentum without spreading hairs. Leaves petiolate, from obovate to nearly orbicular, ½ to 1 in. long, very obtuse, irregularly and coarsely crenate, and often undulate or crisped on the margin, whitish with a close tomentum on both sides. Cymes small, nearly sessile. Calyx tomentose, spreading to nearly 3 lines diameter, the lobes obtuse. Petals broad and expanding into involute lobes at the base, the ligula cuneate-oblong or almost obovate, rather shorter than the calyx. Fruit not seen.

W. Australia. S. coast (?) *Drummond, n.* 61, 271, and 273: Fitzgerald river, *Herb. Mueller.* Some larger-leaved specimens were described by Turczaninow (Bull. Mosc. 1852, ii. 151), under the name of *R. hexamera,* given to them probably from having examined an abnormally hexamerous flower.

12. **R. rotundifolia,** *Turcz. in Bull. Mosc.* 1852, ii. 152. Shrubby, with elongated slender branches, tomentose when young, but soon becoming glabrous. Leaves on short petioles, nearly orbicular, rarely ½ in. long, very obtuse, crenate or rarely lobed, undulate or crisped on the margin, whitish-tomentose on both sides, especially underneath. Cymes nearly sessile. Flowers the smallest of the genus, when expanded scarcely measuring above 2 lines diameter. Calyx tomentose, with obtuse lobes. Petals very concave, but not gibbous or saccate at the base, the ligula linear, rather broad and nearly as long as the calyx. Stamens almost free. Carpels of the ovary almost free. Fruit not seen.

W. Australia, *Drummond, n.* 270; Fitzgerald river, *Herb. Mueller.*

13. **R. densiflora,** *Benth.* An erect shrub of several feet, densely hirsute with stellate hairs. Leaves from ovate to linear, mostly lanceolate, 1 to 2 in. long, pinnatifid, the lobes short, obtuse, and coarsely crenate, or longer and again lobed, very rugose and convex, almost bullate, scabrous or hispid above, white-tomentose or hirsute underneath. Flowers numerous, white, crowded in a terminal compound corymbose cyme, often many inches in diameter. Calyx spreading to about 6 lines diameter, with petal-like, rather acute, softly pubescent lobes. Petals with a broad concave base, often produced into shortly involute lateral lobes, the ligula linear but very short. Stamens nearly or quite free; staminodia pubescent. Fruit-carpels quite separating, keeled and crested on the back, 1-seeded.—*Achilleopsis densiflora,* Turcz. in Bull. Mosc. 1849, ii. 10.

W. Australia. Murchison river and Wangan hills, *Drummond, n.* 100, 38, *Oldfield* and others.

12. COMMERSONIA, Forst.

Calyx 5-lobed. Petals 5, broad and concave at the base, with a small broad or linear ligula at the top. Stamens united in a short cup at the base, 5 perfect with short filaments opposite the petals, alternating with staminodia in threes, the central one of each three lanceolate or spathulate, the lateral ones linear or spathulate, attached at the base either to the central one or to the adjoining anther-bearing filament. Ovary sessile, 5-celled, with 2 to 6 ovules in each cell; styles distinct or united at least at the top. Capsule beset with soft pubescent setæ, opening loculicidally in 5 valves. Seeds usually 2 or 3, ascending, with a small strophiola; albumen fleshy; cotyledons flat.—Trees or shrubs, with stellate tomentum or hairs. Leaves toothed or lobed, often oblique. Flowers small, in terminal, leaf-opposed, or axillary cymes.

The species are all Australian, one is also widely dispersed over Eastern India, the Archipelago and Pacific islands, the others are endemic.

Tall shrubs or trees. Leaves mostly above 3 in. long, acuminate.
Ligula of the petals linear or oblong.
Staminodia all linear-spathulate, elongated, the lateral ones attached to the central . . . . 1. *C. Fraseri.*
Central staminodia lanceolate, lateral ones filiform.
Lateral staminodia attached to the central one. Ligula of the petals oblong, rather short . . . . 2. *C. Leichhardtii.*
Lateral staminodia attached to the anther-bearing filaments. Ligula of the petals long and linear . . . . 3. *C. echinata.*
Small shrubs. Leaves obtuse, undulate and crenate, usually small. Ligula of the petals short and broad.
Lateral staminodia attached to the anther-bearing filaments. Leaves very unequally cordate . . . . 4. *C. Gaudichaudi.*
Lateral staminodia (very small) attached to the central lanceolate one. Leaves equal at the base.
Calyx-lobes rather acute. Leaves much crisped . . . . . . 5. *C. crispa.*
Calyx-lobes very obtuse, broad and white.
Leaves scabrous or tomentose, mostly $\frac{1}{2}$ to 1 in. long . . . 6. *C. pulchella.*
Leaves glabrous above, rarely above 3 lines . . . . 7. *C. microphylla.*

1. **C. Fraseri,** *J. Gay, in Mem. Mus. Par.* x. 215, *t.* 15. A tall shrub, with tomentose or hirsute branches. Leaves cordate-ovate, acuminate, 3 to 6 in. long, irregularly toothed, often oblique at the base, glabrous or slightly pubescent above, white-tomentose or softly hirsute underneath, the lower ones in the young plants broad and 3- or 5-lobed. Cymes loosely dichotomous, many-flowered, but shorter than the leaves. Calyx tomentose, fully 3 lines diameter, the lobes acute. Petals with a very short broad concave base, the ligula oblong-spathulate, nearly as long as the calyx. Staminodia linear-spathulate, as long as the petals, the central one of each three rather broader and lanceolate at the base, the lateral ones filiform at the base and shortly adnate to the central one; anther-bearing filaments very short. Capsule large, densely beset with soft villous setæ. Steetz, in Pl. Preiss. ii. 359; F. Muell. Pl. Vict. i. 148.

N. S. Wales. Banks of the Hawkesbury, *R. Brown;* Port Jackson, *Sieber, n.* 270, and others; northward to Hunter's River, *Fraser, Beckler;* southward to Illawara, *A. Cunningham;* Twofold Bay, *F. Mueller.*

Victoria. Genoa river and valleys under Mount Imlay, *F. Mueller.* The southern form is very tomentose-hirsute, with rather larger flowers.

2. **C. Leichhardtii,** *Benth.* Probably a tall shrub, with the habit of *C. Fraseri;* branches densely velvety-tomentose or hispid. Leaves ovate-lanceolate or cordate, 2 to 3 in. long in the specimens seen, unequally toothed,

rather harshly velvety-tomentose on both sides. Cymes nearly sessile, few-flowered. Calyx very tomentose, spreading to about 5 lines diameter, the lobes broad and acute. Petals with an oblong ligula much shorter than the calyx. Central staminodium of each three lanceolate and fine-pointed, lateral ones filiform, attached to it near the base. Anther-bearing filaments very short. Ovary glabrous.

Queensland. Head of Boyd river, *Leichhardt, in Herb. F. Muell.*

3. **C. echinata,** *Forst.; DC. Prod.* i. 486. A tall shrub or small tree, the young branches and inflorescence whitish-tomentose. Leaves ovate or cordate, acuminate, 3 to 6 in. long or even more, irregularly toothed or nearly entire, often oblique at the base, glabrous or slightly tomentose above, more densely whitish-tomentose underneath. Cymes pedunculate, many-flowered, but shorter than the leaves. Calyx tomentose, nearly 3 lines diameter, the lobes acute. Petals with a very short concave broad base, the ligula narrow-linear, nearly as long as the calyx. Central staminodium of each three lanceolate, pubescent, much shorter than the petals, lateral ones small, filiform, recurved, attached to the very short anther-bearing filaments. Anther-cells less divaricate than in the other species. Capsule often ½ in. diameter, without the long, soft, villous setæ which cover it.

Queensland. Cape York, *M'Gillivray*; Endeavour river, *Banks;* Pine river, *Hill;* Upper Brisbane river, *F. Mueller.*

N. S. Wales. Clarence river, where the natives use the stony fibre of the bark for kangaroo and fishing nets, *Beckler.*

The species is widely spread over the Indian Archipelago and the Pacific islands. The Australian whitish-tomentose form is like the original one described by Forster from the Pacific; the more common one in the Archipelago, often distinguished as a species under the name of *C. platyphylla*, Andr. Bot. Rep. t. 519 (as corrected under n. 603), Bot. Mag. t. 1813, is very villous-tomentose, and has often larger and broader leaves.

4. **C. Gaudichaudi,** *J. Gay, in DC. Prod.* i. 486, *and Mem. Mus. Par.* x. 213, *t.* 14. A low shrub, the young branches tomentose-hirsute. Leaves on very short petioles, obliquely ovate or orbicular, very obtuse, ½ to 1 in. long or rather more, very unequally cordate at the base, the lower broad lobe sometimes quite overlapping the short upper one, scabrous-pubescent or rarely glabrous above, densely tomentose-hirsute and white underneath. Cymes pedunculate, few-flowered. Calyx densely hirsute, spreading to about 3 lines diameter. Petals broad with involute lobes at the base, the ligula very broad and nearly as long as the calyx. Central staminodium of each three lanceolate, the lateral ones filiform, uncinate, attached to the anther-bearing filaments. Capsule densely covered with soft, hispid, almost golden setæ.—Steetz, in Pl. Preiss. ii. 358.

W. Australia. Shark's Bay, *Gaudichaud;* Dirk Hartog's Island, *A. Cunningham;* Murchison river, *Drummond, Oldfield.*

5. **C. crispa,** *Turcz. in Bull. Mosc.* 1846, ii. 501. A low shrub, with elongated, perhaps procumbent branches, hispid with stellate hairs. Leaves shortly petiolate, ovate, obovate or oblong, crenate or irregularly lobed, very much undulate or crisped on the margin, glabrous or nearly so above, white-tomentose and often hirsute underneath. Cymes nearly sessile, few-flowered. Calyx tomentose-hirsute, spreading to 4 or 5 lines diameter, the lobes rather

acute. Petals broad with involute lobes at the base, the ligula obovate or spathulate. Central staminodium of each three lanceolate, lateral ones attached to it, linear-filiform and recurved. Capsule densely covered with short, soft, hirsute setæ.—*Rulingia crispa*, Turcz. in Bull. Mosc. 1849, ii. 10.

W. Australia, *Drummond, n.* 110.

6. **C. pulchella,** *Turcz. in Bull. Mosc.* 1846, ii. 502. A low shrub or undershrub, the upper branches scabrous-tomentose or hispid with rust-coloured stellate hairs. Leaves shortly petiolate, ovate or oblong, ½ to 1 in. long, coarsely and obtusely sinuate-toothed or lobed, undulate or often crisped on the margin, glabrous or scabrous above, white-tomentose underneath. Cymes pedunculate, few-flowered. Calyx rusty-tomentose at the base, spreading to 4 or 5 lines diameter, the lobes petal-like, white (or pink?), broad, and very obtuse. Petals with a cuneate concave base, and a short broad ligula. Central staminodium of each three lanceolate, the lateral ones attached to it, filiform and recurved. Fruit not seen.—*Rulingia pulchella*, Turcz. in Bull. Mosc. 1849, ii. 10.

W. Australia, *Drummond, Coll.* 1845, *n.* 111, and Murchison river, *n.* 97.

7. **C. microphylla,** *Benth.* Apparently a low shrub, with divaricate branches, tomentose when young. Leaves often clustered, very shortly petiolate, ovate or oblong, obtuse, 2 to 4 lines long, entire or sinuately lobed, very convex, glabrous above, white-tomentose underneath. Cymes pedunculate, few-flowered. Calyx tomentose at the base, spreading to 3 or 4 lines diameter, the lobes petal-like, white, broad, and very obtuse. Petals with a cuneate concave base, and a very short broad ligula. Central staminodium of each three lanceolate, lateral ones attached to it, filiform and recurved as in *C. pulchella*, but much smaller. Capsule about 4 lines diameter, villous with short soft not crowded setæ.

W. Australia. Murchison river, *Drummond, n.* 98. This species has most of the characters of *C. pulchella*, but the foliage is too widely different to unite it without having seen intermediate forms.

13. SERINGIA, J. Gay.

Calyx deeply 5-lobed, scarcely enlarged after flowering, and neither scarious nor coloured. Petals none. Stamens 5, alternate with the calyx-lobes, alternating with 5 subulate staminodia, and slightly united with them at the base; anther-cells parallel, opening by dorsal slits. Ovary 5-celled, with 2 or 3 ovules in each cell; styles cohering at the summit or nearly from the base. Fruit-carpels distinct, winged on the back, opening in 2 valves. Seeds strophiolate, albuminous, embryo straight, with flat cotyledons.—Shrub, with the habit nearly of a *Commersonia*. Flowers in dense, terminal or leaf-opposed cymes. Bracteoles none.

The genus is now limited to a single Australian species.

1. **S. platyphylla,** *J. Gay, in Mem. Mus. Par.* vii. 443, *t.* 16, 17. A tall shrub, with the habit nearly of *Commersonia Fraseri*, the young branches loosely whitish- or rusty-tomentose. Leaves ovate to ovate-lanceolate, acuminate, coarsely toothed, 3 to 4 or even 5 in. long, often oblique at the base, glabrous or sprinkled with minute stellate hairs above, densely tomentose underneath.

Cymes rather dense and many-flowered, but much shorter than the leaves. Calyx angular in the bud, attaining, when fully out, about 2 lines in length. Filaments and staminodia nearly similar, rather thick. Anthers oblong. Carpels about as long as the calyx, densely pubescent, the short broad vertical wing truncate at the top.—DC. Prod. i. 488; Steetz, in Pl. Preiss. ii. 349; *Lasiopetalum arborescens*, Ait. Hort. Kew. ed. 2, ii. 36.

N. S. Wales. Port Jackson, *R. Brown;* Blue Mountains, *Miss Atkinson;* Hastings river, *Beckler*.

14. KERAUDRENIA, J. Gay.

Calyx 5-lobed, enlarged and scarious or thin and coloured after flowering, the midrib of each sepal usually thickened without lateral ribs. Petals none, or minute and scale-like. Stamens 5, alternate with the sepals, free or shortly united at the base, with or without intervening staminodia, anther-cells parallel, opening by dorsal slits. Ovary 3- to 5-celled, with 3 or more ovules in each cell; styles cohering at the summit. Capsule membranous, villous or shortly setose, opening loculicidally, and usually separating into distinct carpels. Seeds strophiolate, albuminous; embryo straight or curved, with flat cotyledons.—Shrubs more or less stellate-tomentose. Leaves entire or sinuate-lobed. Stipules narrow, or small and deciduous. Cymes terminal or opposite the upper leaves, few-flowered. Bracteoles none.

Besides the Australian species, there is one other from Madagascar, which on a further examination proves more nearly allied to *K. lanceolata* than had appeared to us when preparing the 'Genera Plantarum.' The genus has the anthers of *Seringia* and *Hannafordia*, with the calyx nearly of *Thomasia*, and must include species, in which as in the Madagascar one, the carpels do not appear to separate, as well as those in which they are quite distinct.

Bracts narrow. Carpels several-seeded, not always separating, the seeds nearly straight. Leaves mostly lanceolate, 1 to 3 in.
  Leaves quite glabrous and smooth above. Capsule scarcely septicidal.
    Leaves broad-lanceolate. Carpels angular, villous and setose . 1. *K. lanceolata.*
    Leaves narrow-lanceolate or linear. Carpels rounded on the back, very villous, but not setose . . . . 2. *K. Hillii.*
  Leaves very rugose and pubescent above . . . . 3. *K. Hookeriana.*
Lower bracts broad scarious and coloured, very deciduous. Carpels 1–2-seeded, the seeds reniform. Leaves ovate or oblong.
  Leaves thick and soft, very rugose, tomentose above, mostly 1 to 2 in. long . . . . 4. *K. nephrosperma.*
  Leaves smooth or slightly rugose, mostly under 1 in.
    Leaves undulate, crenate or crisped . . . . 5. *K. hermanniæfolia.*
    Leaves quite entire . . . . 6. *K. integrifolia.*

1. **K. lanceolata,** *Benth.* A tall shrub, the young branches rusty-tomentose. Leaves shortly petiolate, oblong-lanceolate, 3 to 4 in. long, rather thick, entire, glabrous above and smooth, or with the veins slightly impressed, white-tomentose underneath. Cymes short, few-flowered, very tomentose. Bracts narrow, deciduous. Calyx tomentose, spreading to 4 or 5 lines diameter, divided to about the middle, the midribs prominent and pubescent inside, the lobes of the fruiting calyx attaining 3 or 4 lines or more. Petals none. Filaments rather long, with slender staminodia intervening. Anthers linear. Ovary 5-celled, hirsute. Capsule truncate at the top, fully ½ in. diameter, scarcely septicidal, but distinctly furrowed between the carpels, each

carpel very angular on the edges, so as to make the capsule appear almost 10-winged, but it is so hispid and beset with short, soft, hirsute setæ as almost to disguise its form. Seeds, several in each cell, obovoid; embryo straight.—*Seringia lanceolata*, Steetz, in Pl. Preiss. ii. 349.

Queensland. Port Bowen, *R. Brown*, *A. Cunningham*, also in Leichhardt's collection. It is this species which is closely allied to one from Madagascar, which I had formerly referred to *Thomasia*, on account of its capsule not separating into distinct carpels.

2. **K. Hillii,** *F. Muell. Herb.* Very near to *K. lanceolata*, with the same inflorescence and flowers. Leaves much narrower, linear-lanceolate or linear, 1½ to 3 in. long, coriaceous, glabrous without impressed veins above, white-tomentose, and often sprinkled with rusty stellate hairs underneath. Anther-bearing filaments scarcely dilated. Ovary of *K. lanceolata*. Capsule not so large, very hirsute, but without prominent setæ, furrowed between the carpels, which are rounded on the back, and not angular. Seeds of *K. lanceolata*.

Queensland. Glasshouses, Moreton Bay, *F. Mueller* and *W. Hill*.
N. S. Wales. Port Macquarie and Port Stephens, *Fraser*.

3. **K. Hookeriana,** *Walp. Ann.* ii. 164. Branches rusty-tomentose or hirsute. Leaves mostly oblong-lanceolate, 1½ to 3 in. long, entire, green, very rugose and velvety-pubescent above, densely white-tomentose underneath; the lower leaves or those of some branches often broader and shorter, almost ovate. Cymes or racemes 2- to 4-flowered, terminal or opposite the upper leaves, on very short peduncles. Bracts narrow, deciduous. Calyx divided nearly to the base into acute lobes, 3 or 4 lines long when in flower, 5 or 6 when in fruit. Petals small and scale-like or none. Filaments short, alternating with subulate staminodia. Anthers linear, much incurved. Ovary 5-celled, tomentose. Capsule very hirsute, 4 to 5 lines diameter, the carpels distinct and separating, each opening in 2 valves. Seeds several in each cell, obovoid; embryo straight.—*Seringia corollata*, Steetz, in Pl. Preiss. ii. 330; *Keraudrenia integrifolia*, Hook. in Mitch. Trop. Austr. 341, not Steud.; *K. Hookeri*, F. Muell. Fragm. i. 28, 242.

N. Australia. Arnhem's South Bay, *R. Brown*; Nicholson river, *F. Mueller*.
Queensland. Keppel Bay, *R. Brown*; Suttor, Burnett, Upper Pine, and Brisbane rivers, *F. Mueller*. On the Maranoa, and southward to Lindley's range, *Mitchell*; Robinson's range, *Leichhardt*.

The petals are certainly present in those Carpentaria specimens which I have examined, and as certainly wanting in the flowers I opened of the more southern specimens, and the two are distinguished under different names in R. Brown's herbarium and notes, but I can discover no other character whatever.

4. **K. nephrosperma,** *Benth.* A shrub, with the branches very densely clothed with a soft, velvety, sometimes almost floccose tomentum. Leaves ovate or oblong, very obtuse, 1 to 2 in. long, entire, sinuate or almost lobed at the base, often slightly cordate, green, and minutely tomentose above, densely white or rusty-tomentose underneath. Cymes very short, several-flowered. Bracts ovate, membranous, very deciduous. Calyx tomentose, the lobes very broad and obtuse, attaining about 3 lines, very thin and coloured. Filaments as long as the ovary, with subulate staminodia intervening; anthers oblong. Ovary 5-celled. Fruit carpels separating, nearly

globular, very tomentose. Seeds 1 or 2 in each, globose, reniform.—*Seringia nephrosperma*, F. Muell. in Hook. Kew Journ. ix. 15.

N. Australia. Desert at the sources of Victoria river, Sturt's and Hooker's Creeks, *F. Mueller*; Forster's Range, *M'Douall Stuart.*

5. **K. hermanniæfolia,** *J. Gay, in Mem. Mus. Par.* vii. 462, *t.* 23. A small rigid shrub, the branches tomentose or hirsute with white or rust-coloured stellate hairs. Leaves petiolate, ovate or oblong, very obtuse, rarely above 1 in. long, and often much smaller, mostly sinuate-crenate or undulate and crisped on the margin, glabrous or sprinkled with short, rigid, stellate hairs above, white-tomentose underneath. Cymes loosely several-flowered, almost sessile. Bracts ovate and very thin, but very deciduous. Calyx tomentose, the lobes broad, rather acute, attaining from 3 to near 6 lines, thin and coloured. Filaments dilated at the base, almost free, with 1 or 2, or without any intervening staminodia. Anthers linear-oblong. Ovary 3- to 5-celled, with 3 or 4 ovules in each cell. Capsule often reduced to 1 or 2 carpels, with 1 or 2 reniform-globose seeds.—DC. Prod. i. 490; Steetz, in Pl. Preiss. ii. 346; *K. microphylla*, Steetz, l. c. 347; *Seringia microphylla*, F. Muell. Fragm. ii. 5.

W. Australia. Sharks Bay, *Gaudichaud;* Swan River, and northward to Murchison river and Champion Bay, *Drummond, Collie, Oldfield,* etc.

6. **K. integrifolia,** *Steud. in Pl. Preiss.* i. 236, *and Steetz, l. c.* ii. 347. A small much-branched shrub, the young shoots white or rusty with a close tomentum. Leaves petiolate, oblong, very obtuse, 4 to 8 lines long, entire, glabrous or nearly so above, white-tomentose underneath. Cymes rather loose, several-flowered. Bracts ovate, thin and very deciduous. Calyx tomentose; lobes broad, rather acute, attaining 3 or 4 lines under the fruit, or sometimes more. Filaments dilated and shortly connate at the base, recurved at the top, without any or rarely with 1 or 2 intervening staminodia. Ovary 5-lobed, with about 4 ovules in each. Capsule globular, softly villous; carpels 1- or 2-seeded, not very readily separating.—*Seringia integrifolia*, F. Muell. Fragm. ii. 5.

W. Australia. Swan River, *Drummond, Preiss, n.* 1651; S.W. coast, *Maxwell.*

Var. *velutina.* Leaves rather larger, minutely velvety-tomentose above, densely tomentose underneath. Flowers larger, filaments longer.—*K. velutina*, Steetz, in Pl. Preiss. ii. 348; *Seringia velutina*, F. Muell. Fragm. ii. 5; *S. grandiflora*, F. Muell. Fragm. i. 142. To this belong Drummond's specimens, n. 109, and Maxwell's, from East Mount Barren. The specimen described by Steetz, which I have not seen, was gathered by Roe, between Swan River and King George's Sound.

Actinostigma lanceolatum, Turcz. in Bull. Mosc. 1859, i. 259, from 'New Holland, Brogden,' is described as closely resembling *K. lanceolata* in habit, foliage, and most of the characters, but with axillary, not leaf-opposed inflorescence, 10 stamens all perfect and free, 5 biovulate carpels, the styles connate, with 5 radiating stigmas. I am quite unable to identify any Lasiopetalous plant with this description. It may belong to some very different Natural Order, possibly *Rutaceæ*.

15. HANNAFORDIA, F. Muell.

Calyx 5-lobed, somewhat enlarged after flowering, with prominent raised ribs, 3 to each sepal, besides those connecting the sepals. Petals 5, lanceolate, slightly concave, shorter than the calyx. Stamens 5, opposite the petals; staminodia 3 or fewer between each 2 stamens, linear-subulate, all slightly connected in a ring at the base; anther-cells parallel, opening by dorsal slits. Ovary 3- or 4-celled, with 3 or 4 ovules in each cell. Style simple. Capsule hard, almost woody, opening loculicidally in 3 or 4 valves. Seeds strophiolate, albuminous; embryo straight, with flat cotyledons.—Shrub, with the habit of a *Thomasia*, but without stipules. Bracteoles 3, persistent.

The genus is limited to a single species. It has the anthers of *Keraudrenia* and *Seringia*, with the calyx nearly of *Guichenotia*.

1. **H. quadrivalvis,** *F. Muell. Fragm.* ii. 9. A much-branched shrub of 3 or 4 ft., densely clothed with a soft velvety tomentum, often rusty on the young shoots. Leaves on rather long petioles, obliquely ovate-cordate, obtuse, 1 to 2½ in. long, coarsely sinuate-toothed or broadly lobed, thick and soft. Cymes leaf-opposed, short, and few-flowered. Bracteoles linear, much shorter than the calyx. Calyx about ½ in. long, divided to below the middle into narrow acuminate lobes. Petals about as long as the calyx-tube, but variable. Staminodia in Mueller's specimens 3 between each 2 stamens, but in one of Douglas's I formerly examined I found them singly alternating with the stamens. Capsule shorter than the calyx, most frequently 4-celled, but often also 3-celled.

W. Australia. Murchison river, *Oldfield, Drummond, n.* 100.

16. THOMASIA, J. Gay.

(Leucothamnus, *Lindl.;* Rhynchostemon, *Steetz;* Asterochiton, *Turcz.*)

Calyx 5-lobed, much enlarged and scarious or coloured after flowering, the sepals 1-nerved and reticulately veined, with the midrib usually thickened, spreading or erect-connivent, closing over the fruit. Petals none or minute and scale-like. Stamens 5, alternate with the sepals, free or shortly connate at the base; staminodia none, or 5 alternating with the stamens. Anthers opening at the top towards the inside in short slits, which at length extend more or less down the sides. Ovary 3- or rarely 4- or 5-celled, with 2 or more ovules in each cell; style simple. Capsule enclosed in the calyx, usually crustaceous, opening loculicidally in 3 to 5 valves. Seeds usually strophiolate, albuminous; embryo straight, with flat cotyledons.—Shrubs more or less tomentose or hirsute with stellate hairs, rarely quite glabrous. Leaves entire or lobed. Stipules leafy, usually semihastate or reniform, in one species similar to the leaves, in others small, and in a few entirely wanting. Racemes leaf-opposed, simple or rarely cymosely branched. Bracts narrow, deciduous. Bracteoles under the calyx 3, slightly connate at the base or free. Calyx usually purple bluish or white.

The genus is confined to Australia. It differs from *Lasiopetalum* more constantly in the calyx than in the anthers, the opening of the latter in some *Thomasias* being little more than oblong pores, and in a few *Lasiopetala* extending at length down the sides to the base. The two genera are natural, and the majority of species distinguished by a variety of characters, although there is no one to which there is not some exception. The presence or absence and size of the scale-like petals, the presence or absence and number of staminodia, are liable in all these genera to great variation in individual species.

A. *Stipules leafy. Stamens and staminodia in a distinctly perigynous ring.* (**Leucothamnus.**)

Leaves angular or shortly lobed, scarcely wrinkled, whitish pubescent
above, tomentose underneath . . . . 1. *T. macrocarpa.*

Leaves lobed, very much wrinkled, roughly stellate-hairy above, densely tomentose underneath . . . . 2. *T. rugosa.*

B. *Stipules leafy. Stamens and staminodia united in a hypogynous cup as long as the ovary.*

Leaves ovate or broadly oblong, almost entire . . . . 3. *T. montana.*

C. *Stipules leafy (in* T. foliosa *sometimes wanting). Stamens hypogynous, free or slightly connected at the base, with or without staminodia.*

Leaves mostly ovate-cordate, often sinuate-lobed.
  Leaves closely hoary-tomentose on both sides, without rigid hairs, and scarcely lobed . . . . 4. *T. tenuivestita.*
  Leaves glabrous or hirsute above, tomentose underneath, usually lobed.
    Tall shrubs. Leaves 1½ to 3 in.
      Filaments very short. Leaves scabrous or hirsute above. Racemes rarely branched.
        Bracteoles small, linear. Calyx divided to the middle or lower, lobes acute . . . . 5. *T. solanacea.*
        Bracteoles broadly lanceolate. Calyx not divided to the middle, lobes rather obtuse . . . . 6. *T. brachystachys.*
      Filaments about as long as the anthers. Leaves nearly glabrous above. Racemes branched. Calyx-lobes acute . . 7. *T. discolor.*
    Low shrubs. Leaves mostly under 1 in. Flowers small.
      Calyx-lobes short, broad and obtuse. Stipules reniform . . 8. *T. quercifolia.*
      Calyx deeply divided, lobes acute. Stipules very small . . 9. *T. foliosa.*
Leaves glabrous on both sides, or sprinkled or hispid with rigid stellate hairs, usually lobed.
  Stipules very small. Calyx-lobes deep and acute . . . . . . 9. *T. foliosa.*
  Stipules rather large, reniform or lobed. Calyx-lobes short and rather obtuse.
    Leaves small, glabrous, nearly equally 3-lobed. Flowers rather small . . . . 10. *T. triloba.*
    Leaves 1 to 2 in., more or less stellate-hispid. Flowers large . 11. *T. triphylla.*
Leaves (except the lowest) oblong, lanceolate or linear, entire or hastate with very short lateral lobes, the margins often crisped or revolute.
  Stipules reniform or semihastate. Leaves flat or crisped. Ovary 3- or rarely 4-celled.
    Ovary and style glabrous.
      Flowers rather small. Filaments very short . . . . . . 12. *T. purpurea.*
      Flowers large. Filaments about as long as the anthers . . 13. *T. macrocalyx.*
    Ovary and often the base of the style tomentose.
      Calyx thin, except the prominent midribs.
        Flowers rather small. Filaments short . . . . . . 14. *T. pauciflora.*
        Flowers large. Bracteoles broad. Filaments nearly as long as the anthers . . . . 15. *T. rhynchocarpa.*
      Calyx large, the lobes broadly thick in the centre, with broad, thin, undulate margins . . . . 16. *T. grandiflora.*
  Stipules semihastate. Leaves crisped or revolute on the margins. Ovary 5-celled.
    Leaves petiolate, crisped. Ovary villous . . . . 17. *T. cognata.*
    Leaves sessile, the margins revolute. Ovary glabrous . . . 18. *T. rulingioides.*
  Stipules semihastate. Leaves wrinkled, with revolute margins. Ovary 3- or rarely 4-celled.
    Bracteoles linear-lanceolate . . . . 19. *T. angustifolia.*
    Bracteoles broadly lanceolate or ovate . . . . 20. *T. petalocalyx.*
  Stipules like the leaves, narrow, heath-like, with revolute margins 21. *T. sarotes.*

D. *Stipules none. Stamens hypogynous, free or slightly connected at the base, without staminodia.* (**Rhynchostemon.**)

Tomentum close or dense, not scaly. Leaves 1 to nearly 3 in. Racemes or cymes several-flowered. Bracteoles subulate, distant from the calyx.
  Racemes mostly simple. No petals. Anthers long-acuminate . 22. *T. glutinosa.*
  Racemes mostly branched. Petals present. Anthers shortly acuminate . . . . 23. *T. laxiflora.*
Tomentum scaly. Leaves under 1 in. Racemes 1- to 3-flowered. Bracteoles small under the calyx.
  Leaves oblong-lanceolate or linear, ½ to 1 in. . . . . 24. *T. stelligera.*
  Leaves cordate-orbicular, under ½ in. . . . . 25. *T. pygmæa.*

1. **T. macrocarpa,** *Hueg. in Endl. Nov. Stirp. Dec.* 32. A tall shrub, the branches whitish with a loose tomentum. Leaves broadly ovate-cordate, obtuse, 1½ to 2 in. long, irregularly angular-toothed or shortly lobed, pubescent above when young, at length glabrous, tomentose underneath. Stipules small, oblique or rarely ½ in. long and reniform. Racemes tomentose-hirsute, with few large flowers. Bracteoles broadly ovate-lanceolate, woolly. Calyx opening to about 1 in. diameter, loosely woolly-hirsute outside. Stamens and staminodia united at the base in a very perigynous ring, hirsute outside, glabrous within. Filaments and staminodia longer than the anthers. Ovary tomentose, 3-celled with 2 erect ovules in each cell. Style glabrous.—Steud. Pl. Preiss. i. 235; *T. stipulacea*, Bot. Mag. t. 4111, not Lindl.; *Leucothamnus montanus*, Lindl. Swan Riv. Ap. 19; Steetz, in Pl. Preiss. ii. 336.

W. Australia. Swan River, *Drummond, 1st Coll.; Preiss, n.* 1654.

2. **T. rugosa,** *Turcz. in Bull. Mosc.* 1846, ii. 501. Branches densely tomentose-villous. Leaves cordate-ovate, obtuse, 1 to 3 in. long, sinuate-lobed, very much wrinkled and scabrous with stellate hairs above, very densely tomentose underneath. Stipules reniform. Racemes simple, with rather large nearly sessile flowers. Bracteoles ovate-lanceolate, obtuse, thick and very villous-tomentose. Calyx above ½ in. diameter, softly pubescent, divided to nearly the base into obtuse connivent lobes. Filaments nearly as long as the anthers, inserted with the staminodia in a slightly perigynous ring. Anthers scarcely acuminate. Ovary tomentose, 3-celled with 6 to 8 ovules in each cell; style glabrous.—*Leucothamnus polyspermus*, Turcz. in Bull. Mosc. 1849, ii. 11.

W. Australia. Swan River, *Drummond, n.* 101 *and* 105.

3. **T. montana,** *Steud. in Pl. Preiss.* i. 230; *Steetz, l. c.* ii. 331. Branches tomentose-hirsute. Leaves petiolate, ovate-cordate or broadly oblong, obtuse, mostly under 1 in. long, entire or slightly undulate-crenate, green on both sides, glabrous or sprinkled with short stellate hairs. Stipules broadly oblique or reniform. Racemes on long peduncles, rather closely tomentose-pubescent. Bracteoles linear-oblong or slightly spathulate. Calyx about ½ in. diameter, tomentose, divided to about the middle, the sepals broadly thickened as in *T. grandiflora*, but with a very narrow thin undulate margin. Petals minute. Stamens and staminodia united in a cup as long as the ovary; anthers attached by the middle and nearly sessile on the margin

of the cup, between the short tooth-like staminodia. Ovary tomentose, 3-celled; style glabrous.

W. Australia. Rocky summits of Mount Bakewell, Swan River, *Preiss, n.* 1661.

4. **T. tenuivestita,** *F. Muell. Fragm.* ii. 7. Hoary all over with a close minute but soft tomentum, without rigid hairs. Leaves on slender petioles, ovate-cordate, obtuse, ¾ to 1½ in. long, hoary-tomentose on both sides. Stipules broad, oblique or reniform. Racemes slender, with rather small flowers. Bracteoles oblong-linear, hoary-tomentose. Calyx opening to 5 or 6 lines diameter, slightly tomentose; the lobes not reaching to the middle, broad with a prominent midrib. Petals usually present. Anthers shortly acuminate. Staminodia none. Ovary tomentose, 3-celled; style glabrous.

W. Australia. Murchison river, *Walcot and Oldfield.*

5. **T. solanacea,** *J. Gay, in Mem. Mus. Par.* vii. 456, *t.* 21. A tall shrub or small tree, the branches densely tomentose or shortly hirsute. Leaves deeply cordate-ovate, obtuse, mostly 1½ to 3 in. long, rather deeply sinuate-lobed, scabrous or hirsute above with stellate hairs, more softly and densely tomentose or hirsute underneath. Stipules rather large, reniform, often petiolate. Racemes pedunculate, several-flowered, occasionally branched. Bracteoles small, linear. Calyx more or less tomentose, spreading to about ½ in. diameter, divided to rather below the middle into acute lobes. Petals usually none. Filaments very short; anthers shortly acuminate. Staminodia usually 4, sometimes bearing small anthers. Ovary tomentose, 3-celled; style glabrous.—DC. Prod. i. 489; Steetz, in Pl. Preiss. ii. 327; *Lasiopetalum solanaceum,* Sims, Bot. Mag. t. 1486.

W. Australia. King George's Sound, *R. Brown, Fraser,* and others; Bald Island and Princess Royal Harbour, *Oldfield, Maxwell.*

Some monstrous specimens from King George's Sound are very villous, with more or less developed petals, and the stamens and carpels mostly deformed.

6. **T. brachystachys,** *Turcz. in Bull. Mosc.* 1852, ii. 143. Very nearly allied to the more hirsute specimens of *T. solanacea,* and perhaps a variety of that species. Leaves rather less obtuse and less deeply cordate. Racemes apparently all simple, very hirsute-tomentose. Pedicels very short. Bracteoles broadly lanceolate, thick and rusty-hirsute. Calyx more tomentose than in *T. solanacea,* less deeply divided into more obtuse lobes. Petals usually present.

W. Australia, *Drummond, 5th Coll. n.* 262.

7. **T. discolor,** *Steud. in Pl. Preiss.* i. 233; *Steetz, l. c.* ii. 326. A tufted shrub of 2 to 4 ft., the branches densely tomentose. Leaves cordate-ovate, obtuse, 1 to 2 in. long, sinuately lobed, coriaceous, glabrous or scabrous above, white or rusty-tomentose underneath. Stipules reniform, occasionally petiolate. Cymes pedunculate, several-flowered. Bracteoles linear, rather thick, tomentose. Calyx spreading to about ¾ in. diameter, sprinkled with stellate hairs outside, glabrous within, deeply divided into acute lobes, less coloured than in most *Thomasias,* but with prominent midribs. Petals none. Filaments as long as the anthers, without intervening staminodia. Ovary very villous, 3-celled, with 2 ovules in each cell; style glabrous.

W. Australia. King George's Sound, *Drummond;* rocks at Williamstone, *Preiss, n.* 1658; Mount Elphinstone, *Oldfield.*

8. **T. quercifolia,** *J. Gay, in Mem. Mus. Par.* vii. 459, *t.* 21. A low shrub, with numerous branches, rigidly hirsute-tomentose. Leaves ovate, usually deeply 3-lobed, the lateral lobes short, divaricate and often obtusely 3-lobed, the middle one longer, often 3-lobed, the whole leaf rarely exceeding 1 in., coriaceous, sprinkled above with rigid stellate hairs, tomentose and often rigidly hirsute underneath. Stipules reniform. Racemes simple. Flowers rather small. Bracteoles linear. Calyx-lobes not reaching the middle, broad and obtuse. Petals none. Filaments about as long as the ovary, the anthers rather short, obtuse, opening to the base; staminodia usually present. Ovary tomentose, 3-celled; style glabrous.—DC. Prod. i. 489; Steud. in Pl. Preiss. ii. 329; *Lasiopetalum quercifolium*, Andr. Bot. Rep. t. 459; Bot. Mag. t. 1485; *T. hypoleuca*, Steud. in Pl. Preiss. i. 234.

W. Australia, *Drummond;* King George's Sound, *R. Brown, Preiss, n.* 1646, and others; Franklin river, *Maxwell.*

9. **T. foliosa,** *J. Gay, in Mem. Mus. Par.* vii. 454, *t.* 22. A shrub, with numerous rather slender branches, tomentose and hirsute when young. Leaves petiolate, ovate-cordate, rather deeply sinuate-lobed, rarely exceeding 1 in., sprinkled with stellate hairs above, more densely hirsute underneath. Stipules very small, rarely attaining 2 lines and sometimes almost wanting. Racemes numerous, often branched, slender, hirsute. Flowers small, on slender pedicels. Bracteoles small, linear. Calyx hirsute, about 3 lines diameter, deeply divided into acute usually connivent lobes. Petals none. Filaments as long as the ovary, without intervening staminodia; anthers short and obtuse, almost didymous, the cells opening laterally almost their whole length. Ovary tomentose, 3-celled. Style glabrous.—DC. Prod. i. 489; Steetz, in Pl. Preiss. ii. 325; *T. viridis*, Steud. in Pl. Preiss. i. 234; also most probably *T. diffusa*, G. Don, Gen. Syst. i. 527, which I have not seen.

W. Australia. Geographer Bay, *Leschenault, Baudin;* Swan River, *Fraser, Drummond, Preiss, n.* 1630, 1649, 1653; Gordon, Salt, Kalgan, and Phillips rivers, *Oldfield.*

10. **T. triloba,** *Turcz. in Bull. Mosc.* 1846, ii. 500. A low shrub, with slender branches, quite glabrous or slightly tomentose towards the top. Leaves on long petioles, broadly cordate, mostly ½ to ¾ in. long, nearly equally 3-lobed, lobes broad, obtuse, often sinuate-crenate and undulate, glabrous or rarely sprinkled with a very few stellate hairs. Stipules reniform or 3-lobed. Racemes long and slender, usually glabrous. Bracteoles linear, slightly ciliate. Calyx spreading to about ½ in. diameter, divided to about the middle into broad rather obtuse lobes, glabrous or nearly so, the midrib not much thickened. Filaments short. Ovary densely tomentose, 3-celled; style glabrous.

W. Australia, *Drummond, n.* 106.

11. **T. triphylla,** *J. Gay, in Mem. Mus. Par.* vii. 458. Branches scabrous-tomentose and sometimes hispid. Leaves petiolate, ovate-cordate, 1½ to 2 in. long, sinuate-pinnatifid, with short broad very obtuse lobes, more or less sprinkled with very rigid stellate rusty hairs, but otherwise glabrous. Stipules petiolate, broad, obliquely 2 or 3-lobed, or reniform. Flowers large, in short

hispid racemes. Bracteoles linear-lanceolate, hispid. Calyx opening to nearly 1 in. diameter, hispid at the base only, divided to about the middle into broad lobes with thick midribs. Petals none. Filaments rather long; anthers shortly and obtusely acuminate, staminodia often present. Ovary tomentose, 3-celled.—DC. Prod. i. 489; Steetz, in Pl. Preiss. ii. 328; *Lasiopetalum triphyllum*, Labill. Pl. Nov. Holl. i. 63, t. 88; *Thomasia stipulacea*, Lindl. Swan Riv. App. 18; *T. glabrata*, Steud. in Pl. Preiss. i. 234.

W. Australia. Cape Leeuwin, *Labillardière*; Swan River, *Drummond*, 1*st Coll.*, *Preiss*, *n.* 1635, 1636, *Oldfield*, and others.

T. Gilbertiana, Turcz. in Bull. Mosc. 1849, ii. 10, which I have not seen, would appear from his description to be the same as *T. triphylla.*

12. **T. purpurea,** *J. Gay, in Mem. Mus. Par.* vii. 452, *t.* 21. A small shrub or undershrub, the slender branches more or less tomentose or hirsute. Leaves oblong or nearly linear, obtuse, $\frac{1}{2}$ to 1 in. long, entire, sprinkled with stellate hairs above, more hirsute underneath, or rarely nearly glabrous. Stipules broad and oblique, or almost reniform. Racemes longer than the leaves. Flowers rather small, on very short pedicels. Bracteoles linear. Calyx slightly tomentose, expanding to about $\frac{1}{2}$ in. diameter, divided to about the middle into ovate lobes. Petals small, occasionally wanting. Filaments very short, anthers slightly acuminate. Ovary glabrous, 3- or 4-celled with 2 ovules in each cell; style glabrous.—DC. Prod. i. 489; Steetz, in Pl. Preiss. ii. 318; *Lasiopetalum purpureum*, Ait. Hort. Kew. ed. 2, ii. 36; Bot. Mag. t. 1755; *Thomasia rupestris*, Steud. in Pl. Preiss. i. 231.

W. Australia. King George's Sound, *R. Brown*; *Fraser* and others; Mount Elphinstone, *Preiss*, *n.* 1648.

Var. *undulata.* Larger in all its parts and slightly hoary-tomentose. Leaves mostly 1 to $1\frac{1}{2}$ in. long. Flowers larger, the racemes more pedunculate. Petals usually none.—*T. undulata*, Steetz, in Pl. Preiss. ii. 320. Swan River, *Drummond*, 1*st Coll. and* 2*nd Coll. n.* 58.

Steetz describes the capsule of this and the following species as stipitate, but the stipes, if any, is so short as to be scarcely perceptible.

13. **T. macrocalyx,** *Steud. in Pl. Preiss.* i. 230; *Steetz, l. c.* ii. 319. A shrub of $1\frac{1}{2}$ to 2 ft., nearly allied to *T. purpurea*, but differing chiefly in the large, inflated, fruiting calyx. Branches tomentose and hirsute with stiff stellate hairs. Leaves petiolate, oblong-lanceolate, obtuse, 1 to $1\frac{1}{2}$ in. long, scabrous-pubescent above, tomentose or hirsute underneath. Stipules oblique or semicordate. Racemes long, several-flowered Bracteoles linear-lanceolate. Calyx expanding to nearly $\frac{1}{2}$ in. diameter, with broad short lobes, the midribs much thickened, when in fruit much inflated, depressed-globose, somewhat 5-angled, fully $\frac{1}{2}$ in. diameter, although the lobes are closely connivent. Filaments as long as the anthers, which are more obtuse than in *T. purpurea.* Ovary and style glabrous as in *T. purpurea.*

W. Australia. Preston river, Wellington district, *Preiss*, *n.* 1657; S. W. coast, *Maxwell.*

14. **T. pauciflora,** *Lindl. Swan Riv. App.* 18. Scabrous-tomentose or hirsute. Leaves lanceolate, often cordate, and sometimes hastately 3-lobed at the base, 1 to 2 in. long, green and sprinkled with short, rigid, stellate hairs on both sides. Stipules broad, semihastate or reniform. Racemes

several-flowered. Bracteoles linear or scarcely lanceolate, rather thick, rusty-tomentose or hirsute. Calyx expanding to ½ in. or rather more, divided to below the middle, the midribs prominent. Petals usually but not always present. Filaments short. Ovary tomentose, usually 3-celled; style tomentose at the base, glabrous upwards, the tomentose base often persisting on the ripe capsule.—Steetz, in Pl. Preiss. ii. 329; *T. subhastata*, Steud. in Pl. Preiss. i. 232; Steetz, l. c. ii. 330.

W. Australia. Swan River, *Drummond*, 1*st Coll.*, *Preiss*, *n.* 1633, 1647; King George's Sound, *Harvey.*

T. paniculata, Lindl., Swan Riv. App. 18; Steetz, in Pl. Preiss. ii. 323, from Swan River, appears to be only a luxuriant form of *T. pauciflora*, with rather larger flowers and the glabrous part of the style rather longer. A still more luxuriant variety, with leaves 3 in. long, and the calyx 7 lines diameter, was gathered by Maxwell in the moist valleys of Franklin river.

15. **T. rhynchocarpa,** *Turcz. in Bull. Mosc.* 1852, ii. 142. Very near *T. pauciflora*, with a similar foliage, but the indumentum more ferruginous and denser, the bracteoles and flowers rather differently shaped. Racemes 2- or 3-flowered. Bracteoles oblong or broadly lanceolate, obtuse, thick, and densely rusty-tomentose. Calyx opening to nearly 1 in. diameter, scarcely divided to the middle, with broad obtuse lobes, much replicate on the margins over the fruit, the midribs very prominent inside. Petals minute. Filaments rather long. Ovary tomentose; style also tomentose, excepting quite the extremity, and usually persistent. Fruiting calyx closing over to about ½ in. diameter.—F. Muell. Fragm. ii. 8.

W. Australia, *Drummond*, 5*th Coll. n.* 261; Kojonerup valley and Salt river, *Maxwell.*

16. **T. grandiflora,** *Lindl. Swan Riv. App.* 18. A shrub or undershrub of 1 or 2 ft.; with the habit and foliage of *T. pauciflora*, but at once known by the flowers. Leaves mostly ovate-lanceolate, or oblong, or the lowest ovate, obtuse, ½ to 1 in. long, entire, cordate or obscurely 3-lobed at the base, glabrous or sprinkled with a few stellate hairs. Stipules oblique or semihastate. Flowers large, in terminal racemes. Bracteoles broadly lanceolate, thick, and tomentose-hirsute. Calyx spreading to about 1 in. diameter, not divided to the middle, the broad thick centre of each sepal hirsute-tomentose outside and short-tomentose inside, the broad margins thin, glabrous, and undulate. Petals none. Filaments very short; anthers acuminate. Ovary tomentose, 3-celled, with 8 to 20 or even more ovules in each cell.—Steetz, in Pl. Preiss. ii. 324; *T. cycnopotamica* and *T. lucida*, Steud. in Pl. Preiss. i. 231.

W. Australia. Swan River, *Drummond*, 1*st Coll.*, *Preiss*, *n.* 1645 and 1667; Murchison river and Champion Bay, *Oldfield.*

17. **T. cognata,** *Steud. in Pl. Preiss.* i. 232; *Steetz, l. c.* ii. 320. A low shrub, very hispid with rigid stellate hairs. Leaves petiolate, oblong or lanceolate, obtuse, rarely exceeding 1 in., wrinkled, and very much crisped on the margin, green and hispid on both sides. Stipules broadly semihastate. Racemes slender, with small, nearly sessile flowers. Bracteoles linear-lanceolate. Calyx hispid, opening to about ½ in. diameter, the angles very prominent, divided to about the middle into broad lobes not undulate on the

margin. Petals usually present, very concave and hirsute. Filaments rather long; anthers not acuminate. Ovary very villous, 5-celled, deeply furrowed; style glabrous.

W. Australia. Swan River, *Drummond*, *n.* 68; Rottenest Island, *Preiss*, *n.* 1660 and 1666; Freemantle and King George's Sound, *Oldfield*.

18. **T. rulingioides,** *Steud. in Pl. Preiss.* i. 232; *Steetz, l. c.* ii. 322. A very hispid shrub, at first sight closely resembling *T. cognata*, or the hispid forms of *T. purpurea*, and with the 5-celled ovary of the former, but the leaves are narrower, almost or quite sessile, the crisped margins much revolute, and narrowed at the base. Stipules broadly semihastate or sometimes hastate, 3-lobed. Flowers nearly sessile in the raceme and hispid as in *T. cognata*, but rather smaller. Calyx similar. Petals usually smaller and less hirsute. Filaments rather shorter. Ovary glabrous, granulate.

W. Australia. Swan River, *Preiss*, *n.* 1663.

19. **T. angustifolia,** *Steud. in Pl. Preiss.* i. 232; *Steetz, l. c.* 322. The whole plant clothed with a hoary tomentum, somewhat scabrous on the upper side of the leaves, denser and often rusty underneath, without spreading hairs. Leaves narrow-oblong or rarely lanceolate, obtuse, mostly about 1 in. long, wrinkled with deeply impressed veins, the margins revolute, rounded at the base. Stipules broadly semihastate or semicordate. Racemes slender, with about 4 to 8 small flowers. Bracteoles linear-lanceolate, tomentose. Calyx opening to about 5 lines diameter, divided much below the middle, the margins flat, the principal branching veins of each sepal sometimes prominent as well as the midrib, but not starting from the base, as in *Guichenotia*. Petals generally present, and often a few staminodia. Anthers shortly and obtusely acuminate. Ovary densely tomentose, usually 3-celled; style glabrous.

W. Australia. Southern districts, *Drummond*, *n.* 107, *Preiss*, *n.* 1634; near Cape Riche, *Harvey*; King George's Sound, *Oldfield*; Kojonerup and Fitzgerald ranges, *Maxwell*.

In foliage and habit this has much resemblance to *Lysiosepalum rugosum*, but the flowers are very different.

20. **T. petalocalyx,** *F. Muell. in Trans. Phil. Soc.* i. 35, *and Pl. Vict.* i. 147. Very near *T. angustifolia*, and perhaps a variety. Tomentum more copious, looser, and mixed with long stellate hairs. Leaves often larger, attaining 1½ in., the margins less revolute. Flowers larger. Bracteoles usually broadly lanceolate or almost ovate. Calyx-lobes broader and very obtuse; in other respects the characters are those of *T. angustifolia*.—*T. macrocalyx*, Schlecht. Linnæa, xx. 633, not Steud.

Victoria. Stony coast ridges, Wilson's Promontory, *F. Mueller*.

S. Australia. Light and Gawler rivers, *Behr*; Barossa and Bugle ranges, *F. Mueller*; Kangaroo Island, *Waterhouse*.

W. Australia. Between King George's Sound and the Great Australian Bight, *Maxwell*.

21. **T. sarotes,** *Turcz. in Bull. Mosc.* 1852, ii. 145. Branches slender, minutely tomentose. Leaves almost sessile, linear, obtuse, rarely exceeding ½ in., quite entire, the margins closely revolute, minutely tomentose or glabrous above, more rusty-tomentose underneath. Stipules similar to the leaves and

often nearly as long, giving the plant a heath-like aspect. Racemes long and slender. Bracteoles narrow-linear or slightly spathulate. Calyx 5 or 6 lines diameter, deeply lobed, the lobes almost acute. Petals small and broad; staminodia also occasionally present. Ovary tomentose; style glabrous.

W. Australia, *Drummond, 5th Coll. n.* 256.

22. **T. glutinosa,** *Lindl. Swan Riv. App.* 18. Branches tomentose or slightly hispid, viscid towards the top. Leaves petiolate, the lower ones or sometimes nearly all ovate-cordate, the upper ones or nearly all lanceolate or hastately 3-lobed, the middle lobe often 1 to 2 in. long, the lateral ones very short, all obtuse, glabrous or sprinkled with stellate hairs above, loosely tomentose underneath. Stipules none. Racemes on long peduncles, hirsute and very glutinous. Bracteoles filiform, inserted on the pedicel at some distance from the calyx. Calyx spreading to 6 to 8 lines diameter, slightly pubescent or sometimes hirsute at the base, divided to about the middle into broad acute lobes, petal-like, as in most species, and the central vein of each sepal deeply coloured, but scarcely thickened. Petals none. Filaments very short; anthers produced into a rather long light-coloured point. Ovary villous, 3-celled, with 2 ovules in each cell. Style glabrous or slightly tomentose at the base.—*Rhynchostemon glutinosum,* Steetz, in Pl. Preiss. ii. 334.

W. Australia. Swan River, *Drummond, 1st Coll., Preiss, n.* 1632 and 1668, and others.

Var. *latifolia.* Leaves mostly ovate-cordate, entire or obscurely 3-lobed. Indumentum of the branches and under side of the leaves tomentose only and scarcely hispid. Flowers sometimes, but not always, smaller.—*T. canescens,* Lindl. Swan Riv. App. 18; *T. æmula* and *T. lasiopetaloides,* Steud. in Pl. Preiss. i. 233; *Rhynchostemon canescens,* Steetz, in Pl. Preiss. ii. 335. Swan River, *Drummond, 1st Coll., Preiss, n.* 1636 and 1641.

23. **T. laxiflora,** *Benth.* Young branches densely clothed with a close tomentum. Leaves, like those of the broad-leaved variety of *T. glutinosa,* from ovate-cordate to broadly lanceolate, acuminate, entire or obscurely 3-lobed, 1½ to 2½ in. long, almost coriaceous and glabrous above when full-grown, densely and softly tomentose underneath. Stipules none. Racemes elongated, pedunculate, apparently viscid and subulate; bracteoles distant from the calyx, as in *T. glutinosa.* Calyx very angular, divided to below the middle into ovate, cordate, acuminate segments, glabrous inside at the base with prominent midribs, the broad thin margins tomentose inside. Petals small, broad. Anthers acuminate, but much less so than in *T. glutinosa.* Ovary villous, 3-celled with 2 ovules in each cell. Style glabrous.

W. Australia. Swan River, *Drummond, Coll.* 1843, *n.* 25.

24. **T. stelligera,** *Benth.* A low shrub, with slender wiry branches, covered, as well as the under side of the leaves, with a whitish, almost silvery, scaly tomentum. Leaves shortly petiolate, the upper ones sometimes opposite, from oblong to lanceolate or almost linear, very obtuse, ½ to 1 in. long, glabrous and smooth on the upper side. Stipules none. Flowers rather large, pink, 2 or 3 in the raceme. Bracteoles small, close to the calyx. Calyx sprinkled outside with a few scale-like stellate hairs, slightly tomentose inside, divided to about the middle, angular and almost 5-saccate at the base, the lobes broad and acute, the midribs richly coloured, but scarcely prominent. Petals small. Anthers shortly acuminate. Ovary densely covered

with scaly stellate hairs, 3-celled, with 2 ovules in each cell; style glabrous.—*Lasiopetalum stelligerum*, Turcz. in Bull. Mosc. 1852, ii. 147.

W. Australia, *Drummond, 5th Coll. n.* 257.

25. **T. pygmæa,** *Benth.* Not much branched and only 3 or 4 in. high, but woody, the young shoots and under side of the leaves covered with a minute scaly tomentum. Leaves shortly petiolate, orbicular-cordate, 2 to 4 lines diameter, entire, coriaceous and glabrous above when full-grown. Stipules none. Flowers large, solitary or 2 together, on peduncles longer than the leaves. Bracteoles very small, close to the calyx. Calyx very angular, sprinkled with stellate hairs more or less united into scales, deeply divided into broadly ovate-cordate, acute segments, attaining fully 5 lines, thin and petal-like, with the midribs prominent inside. Petals none. Filaments rather long; anthers very obtuse. Ovary covered with scale-like papillæ, 5-celled, with 2 ovules in each cell. Style glabrous, prominently 5-angled, almost 5-winged to near the summit; stigmas at length separating.—*Asterochiton pygmæus*, Turcz. in Bull. Mosc. 1852, ii. 139.

W. Australia, *Drummond, 5th Coll. n.* 258.

Notwithstanding the curious style, this plant is too closely allied to *T. stelligera* to be separated from it generically. I had formerly referred them both to *Lasiopetalum*, but they have the calyx of *Thomasia*, a character which, after a detailed review of all the species, appears to be the best for distinguishing naturally the two genera.

17. GUICHENOTIA, J. Gay.

(Sarotes, *Lindl.*)

Calyx 5-lobed, enlarged and membranous after flowering, with raised ribs, 3 or 5 to each sepal. Petals 5, small and scale-like. Stamens 5, opposite the petals, slightly connected at the base or free; staminodia none or rarely 1 to 5, very small, alternating with the stamens. Anthers opening at the top towards the inside in short slits, which at length extend more or less down the side. Ovary 5-celled, with 2 to 5 ovules in each cell. Style simple. Capsule shorter than the calyx, opening loculicidally in 5 valves. Seeds usually strophiolate, albuminous; embryo straight, with flat cotyledons.—Shrubs, more or less tomentose with stellate hairs. Leaves narrow, entire, with revolute margins. Stipules leafy, either similar to the leaves or short and oblique. Racemes simple, leaf-opposed. Bracts small and deciduous. Bracteoles small, and not so close to the calyx as in most *Lasiopetaleæ*.

The genus is confined to Australia. It differs from *Thomasia* chiefly in the calyx. The leaves and stipules of those species where they are similar are sometimes described as verticillate leaves.

Style glabrous or tomentose at the base only.
  Stipules like the leaves and scarcely smaller.
    Flowers several in the raceme. Calyx not above 4 lines . . . 1. *G. ledifolia.*
    Flowers 2 or 3. Calyx $\frac{3}{4}$ to 1 in. . . . . 2. *G. macrantha.*
  Stipules semihastate, much smaller than the leaves . . . . . . 3. *G. semihastata.*
Style glabrous at the base, thickly stellate-hairy in the upper half.
  Stipules like the leaves, but smaller. Calyx above 5 lines. Anthers acuminate. No staminodia . . . . 4. *G. Sarotes.*
  Stipules small, semicordate. Calyx about 3 lines. Anthers truncate. Staminodia 5 or fewer . . . . 5. *G. micrantha.*

1. **G. ledifolia,** *J. Gay, in Mem. Mus. Par.* vii. 449, *t.* 20. A shrub clothed with a soft whitish tomentum, either close, or dense and velvety, or almost floccose. Leaves on very short petioles, oblong-linear, obtuse, mostly 1 to $1\frac{1}{2}$ in. long, the margins much revolute, wrinkled, thick, and soft. Stipules similar, but usually rather shorter and more sessile. Racemes several-flowered. Calyx $2\frac{1}{2}$ to 4 lines long, scarcely membranous, tomentose, the 3 prominent ribs on each sepal giving it a rigid striate appearance. Filaments rather short; anthers acuminate. Ovary densely tomentose, usually 5-celled, with 3 to 5 ovules in each cell; style glabrous.—DC. Prod. i. 489; Steetz, in Pl. Preiss. ii. 318.

W. Australia. Swan River, *Drummond, n.* 67; *Preiss, n.* 1670; and northward to Rottenest Island, *A. Cunningham*; Sharks Bay, *Leschenault*; Murchison river, *Oldfield.*

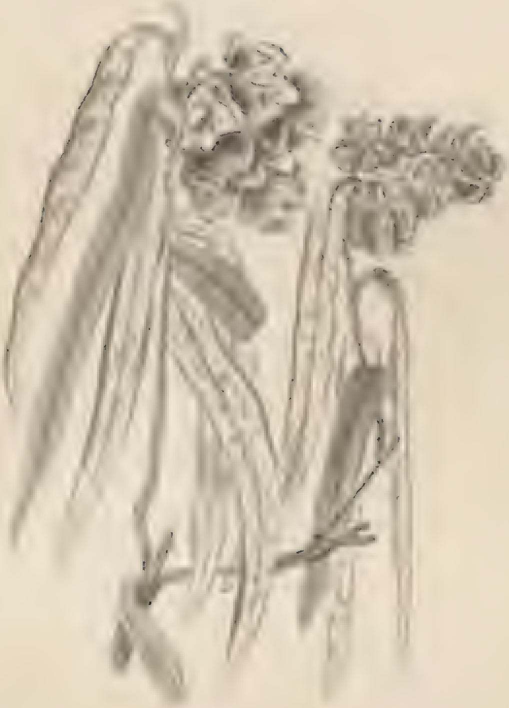
2. **G. macrantha,** *Turcz. in Bull. Mosc.* 1846, ii. 500. A shrub with the foliage and indumentum of *G. ledifolia*, but very much larger pendulous flowers, on thickened pedicels, in racemes of 2 or 3. Bracteoles sometimes, but not always, larger and closer to the calyx. Calyx at length $\frac{3}{4}$ to 1 in. long, sprinkled with stellate tomentum, more membranous than in *G. ledifolia*, divided to about the middle into broad, acute lobes, with 3 prominent ribs to each sepal. Filaments rather long. Ovary 5-celled, densely glandular-tomentose, with 4 or 5 ovules in each cell; style tomentose at the base, glabrous upwards.—Bot. Mag. t. 4651.

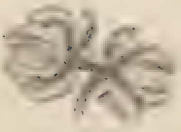
W. Australia. Swan River, *Drummond, n.* 133; in the interior, *Roe.*

3. **G. semihastata,** *Benth.* A low shrub, with the aspect nearly of *G. Sarotes*, but the tomentum usually closer and thinner, sometimes disappearing from the upper surface of the leaves. Leaves on short petioles, oblong-linear, obtuse, $\frac{1}{2}$ to 1 in. long, the margins much revolute. Stipules semihastate, sometimes very small, sometimes half as long as the leaves. Flowers pendulous, solitary, or 2 or 3 in a short raceme, large, like those of *G. Sarotes.* Bracteoles small, cordate-acuminate or lanceolate. Calyx $\frac{1}{2}$ to $\frac{3}{4}$ in. long, sprinkled with a slight tomentum, divided to below the middle into broad, almost cordate lobes, with 3 or 5 raised ribs to each sepal. Filaments shorter than the anthers. Ovary tomentose and glandular, 5-celled, with 2 ovules in each cell; style glabrous. *Sarotes semihastata*, F. Muell. Fragm. ii. 4; *Ditomostrophe angustifolia*, Turcz. in Bull. Mosc. 1846, ii. 499.

W. Australia, *Drummond, n.* 102; White Peak and Champion Bay, *Oldfield.*

4. **G. Sarotes,** *Benth.* A low, much-branched, softly tomentose shrub. Leaves almost sessile, oblong-linear, obtuse, the margins much revolute, mostly about $\frac{1}{2}$ in., but sometimes 1 in. long. Stipules similar, but smaller, sometimes scarcely above half as long. Racemes pedunculate, with few rather large pendulous flowers. Bracteoles small. Calyx thin, 5 or 6 lines long, or nearly 9 when in fruit, divided to below the middle into broad, almost cordate lobes, with 3 raised ribs to each sepal. Filaments very short; anthers acuminate. Ovary densely glandular-tomentose, 5-celled with 2 or 3 ovules to each cell. Style glabrous at the base, densely covered with stellate hairs in the upper half.—*Sarotes ledifolia*, Lindl. Swan Riv. App. 19; Hook. Journ. Bot. ii. 381, t. 16; *Thomasia pumila*, Steud. in Pl. Preiss. i. 233, according to Steetz, l. c. ii. 345.





[illegible]

W. Australia. Swan River, *Drummond*, *1st Coll.*, *2nd Coll. n.* 59, *Preiss, n.* 1643.

5. **G. micrantha,** *Benth.* Smaller and more branched than the other species, but equally tomentose. Leaves on very short petioles, oblong-linear or almost lanceolate, obtuse, mostly under ½ in. and rarely 1 in. long, the margins much revolute. Stipules obliquely ovate-cordate, usually very small, and sometimes wanting. Racemes 3- to 6-flowered. Bracteoles linear-filiform. Calyx about 3 lines long, very broad and angular, the sepals united much above the middle, with 3 or 5 prominent ribs to each. Filaments very short, alternating with small staminodia: anthers very truncate and usually tipped with a tuft of short hairs. Ovary tomentose, 5-celled; style densely covered with stellate hairs from below the middle to the top.—*Sarotes micrantha*, Steetz, in Pl. Preiss. ii. 346; *Thomasia pogonanthera*, F. Muell. Fragm. ii. 7.

W. Australia, *Drummond*, *n.* 63; *Berges;* White Peak, Champion Bay, *Oldfield.*

18. LASIOPETALUM, Sm.

(Corethrostylis, *Endl.*)

Calyx 5-lobed nearly to the base, not much enlarged after flowering, without prominent ribs, the sepals obscurely several-veined at the base. Petals small and scale-like, or rarely none. Stamens 5, opposite the petals, slightly connected at the base or free, without intervening staminodia; anthers opening in terminal or inwardly oblique pores or short slits, which rarely extend down the sides. Ovary 3-celled, or rarely 4- or 5-celled, with 2 or very rarely more ovules in each cell; style simple. Capsule shorter than the calyx, opening loculicidally. Seeds usually solitary in each cell, erect, strophiolate, albuminous; embryo straight, with flat cotyledons.—Shrubs, more or less tomentose or pubescent with stellate hairs. Leaves entire or rarely lobed, often coriaceous and glabrous on the upper side, in one species nearly all opposite, and in some others occasionally so. Stipules none. Flowers in small drooping cymes contracted into heads, or in looser-branched cymes, or rarely in simple racemes. Bracteoles 3 or fewer, in some species very small.

The genus is entirely Australian. It differs from *Thomasia* chiefly in the calyx and generally in habit. The want of stipules is constant in *Lasiopetalum*, but occurs also in the section *Rhynchostemon* of *Thomasia*, to which some *Lasiopetala* of the section *Corethrostylis* bear much affinity. They are, however, readily known by the peculiar hairs of the style in that group, which never occur in *Thomasia*.

A. *Style glabrous.*

Bracteoles longer than the calyx, forming an involucre round the soft woolly flower-heads. Leaves cordate-ovate, white-tomentose underneath . . . . 1. *L. discolor.*
Bracteoles not exceeding the calyx, or subulate and loose.
  Calyx-segments glabrous inside (except the edges).
    Calyx-segments mostly 3 lines long or more.
      Cymes dense. Calyx very angular.
        Leaves cordate-ovate or lanceolate . . . . 2. *L. dasyphyllum.*
        Leaves linear. Calyx-segments acuminate . . . . . 5. *L. parviflorum.*
      Cymes few-flowered, not dense. Leaves oblong or linear, thickly coriaceous. Calyx scarcely angular.
        Sepals narrow-lanceolate, loosely woolly tomentose . . 3. *L. indutum.*

Sepals broad, thick, closely tomentose . . . . 4. *L. Behrii.*
Calyx-segments rarely exceeding 2 lines and mostly smaller.
Leaves opposite, linear-lanceolate . . . . 6. *L. oppositifolium.*
Leaves linear, coriaceous, smooth above. Calyx very angular 5. *L. parviflorum.*
Leaves linear, rugose. Anther-cells opening laterally to the base . . . . 7. *L. micranthum.*
Leaves cordate-lanceolate, rugose. Cymes loose, many-flowered. Calyx very spreading . . . . 3. *L. macrophyllum.*
Calyx-segments tomentose or pubescent inside.
Leaves linear. Cymes or racemes almost simple.
Racemes several-flowered, reflexed. Calyx-segments not above 3 lines, acute . . . . 9. *L. Baueri.*
Flowers on slender pedicels, scarcely racemose. Calyx-segments 4 to 5 lines, broad and scarcely acute . . . . 10. *L. rufum.*
Leaves cordate or lanceolate.
Cymes dense, nearly sessile. Calyx very angular. Anthers not acuminate . . . . 11. *L. ferrugineum.*
Cymes pedunculate, loose. Calyx-segments thick. Anthers acuminate . . . . 12. *L. acutiflorum.*

B. *Style densely covered from the top of the anthers to the summit or near the summit with stellate horizontal or reflexed hairs, forming a cylindrical or conical mass.* (**Corethrostylis,** *Endl.*)

Leaves oblong-lanceolate or linear. Bracteoles usually 3.
Cymes densely capitate. Bracteoles and calyx-segments linear and softly plumose-villous . . . . 13. *L. Drummondii.*
Cymes few-flowered. Bracteoles short. Calyx hoary-tomentose 14. *L. rosmarinifolium.*
Leaves cordate-ovate. Bracteoles 1 or 2.
Bracteoles linear or subulate.
Pedicels short. Bracteoles close to the calyx.
Leaves coriaceous, glabrous above, tomentose underneath. Calyx 2 to 3 lines . . . . 15. *L. cordifolium.*
Leaves densely tomentose, villous underneath. Calyx 3 to 4 lines . . . . 16. *L. Schulzenii.*
Pedicels longer than the calyx. Bracteoles distant. Calyx-segments narrow-lanceolate, 2 lines . . . . 17. *L. floribundum.*
Bracteoles ovate, membranous and coloured.
Bracteoles close to the calyx. Pedicels short. Tomentum short and soft . . . . 18. *L. molle.*
Bracteoles below the middle of the pedicel.
Leaves sprinkled with rigid stellate hairs, otherwise glabrous. 19. *L. membranaceum.*
Leaves tomentose underneath . . . . 20. *L. bracteatum.*

A. LASIOPETALUM proper.—Style glabrous.

1. **L. discolor,** *Hook. Comp. Bot. Mag.* i. 276, *and Journ. Bot.* ii. 414. A shrub of several feet, the branches tomentose. Leaves petiolate, ovate-cordate, obtuse, 1 to 2 or rarely 3 in. long, coriaceous, loosely tomentose above when young, but soon glabrous, white-tomentose underneath. Cymes contracted into dense softly tomentose heads, on short recurved peduncles. Bracteoles longer than the calyx, oblong-linear, petal-like, with a broad thick central nerve, tomentose, arranged in a kind of radiating involucre round the head. Calyx-segments thin and petal-like, 3 to 4 lines long, softly tomentose outside, glabrous inside. Petals often shortly clawed. Anthers rather long. Ovary very villous; style glabrous.—*L. confertiflorum*, F. Muell. in Linnaea, xxv. 377; *L. capitellatum*, Turcz. in Bull. Mosc. 1852, ii. 148.

Tasmania. Hummock or Prime Seal Island, Bass's Straits, *Backhouse*, *Gunn*, and others.

S. Australia. Port Lincoln, *R. Brown*, *Wilhelmi*; Memory Cove, *R. Brown*; Venus Bay and Kangaroo Island, *Waterhouse*.

W. Australia. S. coast, *Drummond*, *5th Coll. n.* 263; sandy hills, S.W. Bay and Doubtful Island Bay, *Oldfield*.

2. **L. dasyphyllum,** *Sieb.*; *Hook. Journ. Bot*, ii. 414. A tall shrub, the young branches rusty-tomentose. Leaves from ovate-cordate to cordate- or oblong-lanceolate, in luxuriant specimens 3 or 4 in. long and acute, in others much smaller and obtuse, entire, coriaceous, glabrous or slightly scabrous above, white or rusty-tomentose underneath. Cymes reflexed, nearly sessile, very dense, almost capitate, and densely rusty-tomentose. Bracteoles lanceolate, shorter than the calyx. Calyx-segments ovate-lanceolate, 3 to 4 lines long, tomentose outside, glabrous inside. Anthers truncate, about as long as the filaments. Ovary tomentose, usually 4-celled (almost constantly 3-celled in all other species of the genus). Style glabrous or tomentose at the base only.—Steetz, in Pl. Preiss. ii. 341; F. Muell. Pl Vict. i. 144; *L. Gunnii*, Steetz, l.c. ii. 342; Hook. f. Fl. Tasm. i. 51; *L. Wilhelmi*, F. Muell. in Trans. Phil. Soc. Vict. ii. 65.

N. S. Wales. Grose river, *R. Brown*; Port Jackson, *Sieber*, *n.* 240, and others; Blue Mountains, *A. Cunningham* and others; southward to Twofold Bay, *F. Mueller*.

Victoria. Highest declivities of the Grampians, *Wilhelmi*; granitic ridges, more frequent towards the eastern boundary, *F. Mueller*.

Tasmania. Rocky Cape and islands of Bass's Straits, *Gunn*.

3. **L. indutum,** *Steud. in Pl. Preiss.* i. 235; *Steetz, l.c.* ii. 340. A much-branched shrub of 2 to 4 ft., the young shoots rusty-tomentose. Leaves from broadly oblong to linear, obtuse, 1 to 3 in. long, not cordate at the base, the margins slightly recurved, coriaceous, glabrous above when full grown, densely tomentose underneath. Cymes shortly pedunculate, compact, reflexed, few-flowered. Bracteoles linear, tomentose-villous, shorter than or sometimes as long as the calyx. Calyx-segments lanceolate, acute, 2 to 3 lines long, densely tomentose or softly villous outside, glabrous or nearly so inside. Filaments short; anthers contracted at the top, with oblique pores. Ovary tomentose-villous; style glabrous.

W. Australia. Konkoberup hills, *Preiss*, *n.* 1655; towards Cape Riche, *Drummond*; S.W. interior, *Maxwell* (with less woolly flowers): sand-hills by the south coast; *R. Brown* (with small flowers).

4. **L. Behrii,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 36, *and Pl. Vict.* i. 143, *t.* 3. An erect or diffuse shrub, of several feet, nearly allied to *L. indutum*, but with larger more rigid flowers. Young branches rusty-tomentose. Leaves shortly petiolate, from oblong to linear, obtuse, mostly 1½ to 2½ in. long, not cordate at the base, the margins recurved, coriaceous, glabrous above when full grown, hoary or rusty underneath with a close tomentum. Cymes shortly pedunculate, rather loose. Bracteoles linear, much shorter than the calyx. Calyx-segments ovate, acute, 3 to 4 lines long, rather thick, obscurely 3-nerved and white-tomentose outside, glabrous inside. Filaments very short; anther-pores small, terminal. Ovary tomentose; style glabrous.

N. S. Wales. Darling and Murrumbidgee rivers, *F. Mueller*.

Victoria. In the N.W. district, *F. Mueller.*

S. Australia. S. coast, *R. Brown;* from the Murray river to Kangaroo Island and the E. extremity of the Great Australian Bight, and northward to Lake Torrens, *F. Mueller.*

5. **L. parviflorum,** *Rudge, in Trans. Linn. Soc.* x. 297, *t.* 19. A tall shrub, the young branches hoary or rusty-tomentose. Leaves on short petioles, linear, obtuse, mostly 1½ to 3 in. long, coriaceous, glabrous above, white or rusty-tomentose underneath. Cymes shortly pedunculate, corymbose and several-flowered, but much shorter than the leaves. Bracteoles small, the 2 lateral ones sometimes minute or even wanting. Calyx-segments 1½ to 2 lines long, minutely white-tomentose outside, glabrous inside. Filaments very short, anthers ovate, truncate. Ovary tomentose; style glabrous.—J. Gay, in Mem. Mus. Par. vii. 447, t. 19; DC. Prod. i. 489; Steetz, in Pl. Preiss. ii. 339; F. Muell. Pl. Vict. i. 142.

N. S. Wales. Port Jackson, *R. Brown, A. Cunningham;* Twofold Bay, *F. Mueller.*

Victoria. Granite banks of watercourses towards the eastern frontier, *F. Mueller.*

Var. *major.* Calyx-segments 2 to 3 lines long. Cymes denser. To this belong most of the southern specimens.

Var. (?) *occidentale.* Leaves smaller, rarely above 1 in. long. Flowers small. Bracteoles very small. Scarcely, however, to be distinguished from some of the smaller-flowered Port Jackson specimens.

W. Australia, *Drummond,* 5*th Coll. n.* 267.

6. **L. oppositifolium,** *F. Muell. Fragm.* ii. 5. A diffuse shrub, with slender, rigid, divaricate branches, whitish with a close tomentum. Leaves mostly opposite, shortly petiolate, lanceolate or oblong-linear, 2 to 4 in. long, slightly cordate at the base, glabrous above, minutely tomentose underneath. Cymes shortly pedunculate, reflexed, glandular-hispid. Flowers small. Bracteoles linear, longer than the calyx. Calyx-segments lanceolate, 2 to 3 lines long, hirsute outside, glabrous within. Anthers opening in terminal pores, but at length splitting also laterally, Ovary hirsute; style glabrous.

W. Australia. Murchison river, *Oldfield.* The specimens have only very imperfect withered flowers.

7. **L. micranthum,** *Hook. f. Fl. Tasm.* i. 51. A small shrub, branches tomentose. Leaves petiolate, oblong-linear, obtuse, 1 to 2 in. long or rarely more, the margins revolute, glabrous, or slightly scabrous and wrinkled with impressed veins above, densely tomentose underneath. Cymes shortly pedunculate, corymbose, reflexed. Bracts broadly ovate, concave, the lateral ones small. Calyx-segments lanceolate, acuminate, about 2 lines long, slightly tomentose outside, glabrous within. Filaments short; anthers truncate, the cells opening laterally to the base more readily than in any other species. Ovary tomentose; style glabrous.

Tasmania. Eastern Tier, near Oyster Bay, and S.E. of Launceston, *Gunn;* near Swan Port, *C. Stuart.*

8. **L. macrophyllum,** *Grah. in Bot. Mag. t.* 3908. A tall shrub, the branches densely rusty-tomentose. Leaves petiolate, ovate-lanceolate or lanceolate, mostly acute, 2 to 4 in. long, glabrous, or slightly scabrous, and much wrinkled with impressed veins above, densely tomentose underneath. Cymes shortly pedunculate, corymbose, reflexed, rather loose, with numerous small

flowers. Bracteoles linear, nearly as long as the calyx. Calyx-segments very spreading or almost reflexed, under 2 lines long in the wild specimens, lanceolate, acuminate, tomentose outside, glabrous within. Filaments rather long; anthers oblong, their terminal pores light-coloured and very conspicuous. Ovary tomentose, style glabrous.

N. S. Wales. Paramatta and Sydney, *R. Brown;* Southward of the colony, *A. Cunningham.* I have not seen Graham's specimens, but the figure quoted well represents this plant, except that the flowers are larger than in the specimens I have seen.

9. **L. Baueri,** *Steetz, in Pl. Preiss.* ii. 339. A shrub of several feet, the branches hoary or rusty with a close tomentum. Leaves on short petioles, linear or oblong-linear, obtuse, mostly 1 to 2 in. long, the margins revolute, coriaceous, glabrous or minutely tomentose above, white or rusty-tomentose underneath. Flowers few, in short pedunculate reflexed racemes, rarely branching into cymes. Bracteoles small, oblong or linear. Calyx-segments 2½ to 3 lines long, acute, tomentose outside and slightly so inside. Filaments very short; anthers contracted at the top. Ovary tomentose. Style glabrous or occasionally bearing a few stellate hairs.—F. Muell. Pl. Vict. i. 142.

N. S. Wales. Blue Mountains, *Miss Atkinson;* Darling and Murrumbidgee rivers, *F. Mueller.*

Victoria. Murray scrub and Sandy Desert near Brighton, but rare, *F. Mueller.*

S. Australia. Memory Cove, *R. Brown;* sand ridges from the Murray river to St. Vincent's Gulf, Kangaroo Island, and Spencer's Gulf, *F. Mueller.*

This is a very variable plant, difficult to define from dried specimens. Some of the numerous forms, especially in Mr. Brown's collection, seem to connect it on the one hand with the large-flowered varieties of *L. parviflorum,* and on the other hand, in some measure, with some forms of *L. ferrugineum.*

10. **L. rufum,** *R. Br. Herb.* A slender much-branched shrub of 1½ to 2 ft., the young branches minutely tomentose. Leaves, as in *L. parviflorum,* linear, obtuse, 1 to 1½ in. long, coriaceous, the margins revolute, glabrous above, white-tomentose underneath. Flowers solitary or 2 or 3 together in very loose simple racemes, the pedicels 2 to 4 lines long. Bracts linear-subulate, not close to the calyx. Calyx broad, slightly tomentose both within and without, the segments broader and less acute than in most *Lasiopetala,* but faintly several-veined, not 1-nerved as in *Thomasia.* Petals scale-like, filaments short and anthers contracted at the top as in *L. Baueri,* to which the species is in many respects nearly allied.

N. S. Wales. St. George's River, *R. Brown* (*Herb. R. Br.*).

11. **L. ferrugineum,** *Sm. in Andr. Bot. Rep. t.* 208. A tall shrub, the young branches hoary or rusty with a short tomentum. Leaves on very short petioles, the longer ones narrow-lanceolate or oblong-linear, 3 or 4 in. long, the margins slightly recurved, entire sinuate or hastate with short basal lobes, coriaceous, glabrous above, tomentose underneath, the lower ones often shorter and broader and sometimes cordate-ovate. Cymes dense, nearly sessile and reflexed. Calyx very angular, the segments ovate, acute, 3 or rarely 4 lines long, rather thick and tomentose inside as well as out. Anthers about as long as the filaments. Ovary tomentose; style glabrous, except at the base.—DC. Prod. i. 489; Vent. Jard. Malm. t. 59; Bot.

Mag. t. 1766; J. Gay, in Mem. Mus. Par. vii. 446, t. 18; Steetz, in Pl. Preiss. ii. 337; F. Muell. Pl. Vict. i. 141.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 572, and others; Blue Mountains, *A. Cunningham.*

Victoria. Granite ridges of the E. extremity near Mount Imlay, *F. Mueller.*

Var. *cordatum.* Leaves shorter, from cordate-ovate to cordate-lanceolate. Cymes looser. —*L. Sieberi*, Steetz, in Pl. Preiss. ii. 338; *L. rubiginosum*, A. Cunn. in Field. N. S. Wales, 354; Steetz, l. c. To this variety belong the Blue Mountain and Victorian specimens; the small-flowered ones described by Steetz do not otherwise differ from the larger-flowered ones gathered by Cunningham in the same locality.

12. **L. acutiflorum,** *Turcz. in Bull. Mosc.* 1852, ii. 145. Branches densely rusty-tomentose. Leaves petiolate, cordate-lanceolate, obtuse, 1½ to 2½ in. long, tomentose above when young, at length glabrous, densely tomentose underneath, coriaceous, with impressed veins, the margins recurved. Cymes pedunculate, little branched or reduced to simple racemes. Bracteoles linear-filiform, softly villous. Calyx-segments about 3 lines long, but slightly united at the base, lanceolate, thick, softly tomentose-villous outside, tomentose inside. Petals thicker than in most species, truncate and almost glandlike. Filaments very short; anthers shortly acuminate and opening in short oblique slits as in most *Thomasias.* Ovary villous, 5-celled according to Turczaninow, 3-celled in our specimens; style glabrous.

W. Australia, *Drummond*, 5*th Coll. n.* 254.

Var. *Oldfieldi.* Leaves shorter and broader, sometimes ovate-cordate. Petals villous, whilst in Drummond's specimens they are only slightly so or glabrous.—*L. Oldfieldi*, F. Muell. Fragm. ii. 6.—Murchison river, *Oldfield.*

Var. *quinquenervium.* Leaves ovate-cordate, 1 to 2 in. long. Cymes looser. Flowers larger, the calyx segments fully 4 lines long. Petals more or less villous. Filaments as long as the petals.—*L. quinquenervium*, Turcz. in Bull. Mosc. 1852, ii. 146.—South coast? *Drummond*, 5*th Coll. n.* 260; Point Henry and Doubtful Island Bay, *Oldfield*; W. Mount Barren, *Maxwell.*

B. CORETHROSTYLIS, Endl.—Style, so-called *scopiform*, that is, covered from below the middle to the summit or near the summit with a dense mass of prominent horizontal or reflexed stellate hairs, the lower ones often longer and covering the tips of the closely appressed anthers.

This group, proposed as a genus by Endlicher, appears to me quite artificial. Some species have also a looser inflorescence and single bracteoles, but in the first two, the habit, inflorescence, and 3 bracteoles, are quite those of the true *Lasiopetala.*

13. **L. Drummondii,** *Benth.* Branches densely rusty-tomentose. Leaves petiolate, oblong-lanceolate, obtuse, 1 to 2 in. long, coriaceous, with recurved margins, glabrous above when full-grown, densely and softly tomentose underneath. Cymes contracted into dense heads, on short recurved peduncles, softly plumose-villous and white as in *L. discolor.* Bracteoles 3, linear-filiform, softly villous, as long as the calyx. Calyx-segments lanceolate-linear, about 4 lines long, softly villous outside, glabrous inside. Filaments very short. Ovary villous; style scopiform, the tip often glabrous.

W. Australia, *Drummond*, a single specimen.

14. **L. rosmarinifolium,** *Benth.* A much-branched shrub, the young shoots hoary or rusty, with a close tomentum. Leaves shortly petiolate, linear, obtuse, 1 to 2 in. long, coriaceous, with revolute margins, glabrous

above when old, tomentose underneath. Cymes shortly pedunculate, reflexed, few-flowered. Bracteoles 3, linear, short. Calyx-segments lanceolate, 3 to 4 lines long, tomentose outside, glabrous within. Anthers almost acuminate, with oblique pores. Ovary densely tomentose, occasionally 4-celled; style scopiform, the tip glabrous.—*Sarotes rosmarinifolia*, Turcz. in Bull. Mosc. 1852, ii. 149.

W. Australia. Swan River, *Drummond, 5th Coll. n.* 266, *Roe.*

Var. *latifolia.* Leaves shorter and broader, mostly linear-oblong, 1 to 1½ in. long. Flowers rather smaller.—*Sarotes latifolia*, Turcz. in Bull. Mosc. 1852, ii. 150; *Drummond, 5th Coll. n.* 265.

15. **L. cordifolium,** *Endl. in Hueg. Enum.* 10. A low, erect shrub, the young branches hoary with a minute tomentum. Leaves petiolate, broadly cordate, obtuse or shortly acuminate, rarely above 1½ in., and mostly under 1 in. long, coriaceous, glabrous above and not wrinkled, tomentose underneath. Cymes shortly pedunculate, but scarcely exceeding the leaves, rather dense and few-flowered. Bracteoles linear, solitary, or rarely with 1 or 2 lateral small ones. Calyx very angular, the segments about 2 lines long, ovate-lanceolate or cordate-acuminate, rather thick, tomentose outside. Petals none. Anthers nearly sessile. Style scopiform.—*Corethrostylis cordifolia*, Steetz, in Pl. Preiss. ii. 344; *C. microphylla*, Turcz. in Bull. Mosc. 1852, ii. 148.

W. Australia. King George's Sound, *A. Cunningham* and others; Mount Melville, *Preiss, n.* 1659; south coast? *Drummond, 5th Coll. n.* 259, and *Suppl. n.* 39.

16. **L. Schulzenii,** *Benth.* A shrub of several feet, the branches densely tomentose-villous. Leaves petiolate, deeply cordate, broadly ovate or almost orbicular, obtuse or scarcely acute, mostly 1½ to 2 in. long, pubescent or tomentose above, or at length glabrous, densely but loosely tomentose underneath, sometimes almost floccose. Cymes loose, many-flowered, but rarely exceeding the leaves. Bracteoles 1 or 2, linear-filiform, small. Calyx softly tomentose, the segments 3 or 4 lines long, rather thin, glabrous inside, except on the margins. Petals usually present. Filaments short. Ovary tomentose. Style scopiform.—*Corethrostylis Schulzeni*, F. in Muell. Trans. Phil. Soc. Vict. i. 36, and Pl. Vict. i. 145.

Victoria. Cape Nelson, *Allitt*; entrance of the Glenelg river, *J. E. Woods.*

S. Australia. Memory Cove, *R. Brown*; Mount Benson, near Cape Bernouille and Guichen Bay, *Schulzen*; Kangaroo Island, *Waterhouse.*

17. **L. floribundum,** *Benth.* Branches slender, more or less tomentose or hirsute, or rarely nearly glabrous. Leaves petiolate, broadly ovate-cordate, obtuse, mostly ¾ to 2 in. long, entire or irregularly sinuate or broadly lobed, thin, but rigid, glabrous, scabrous, or sprinkled with stellate hairs above, more or less stellate-hairy or sometimes tomentose underneath, rarely quite glabrous. Cymes slender, often twice forked, longer than the leaves, hirsute or tomentose. Bracteoles solitary or rarely 2, minute and filiform, inserted on the slender pedicel above or below the middle. Calyx tomentose or hirsute at the base, the segments 2 to 3 lines long, narrow-lanceolate, acuminate, glabrous inside. Petals none. Anthers nearly sessile. Style scopiform.—*Corethrostylis parviflora*, Turcz. in Bull. Mosc. 1847, i. 174 (from the character given); *C. oppositifolia*, F. Muell. Fragm. ii. 6.

W. Australia, *Drummond, n.* 28 and 156, *Oldfield*, *Maxwell:* Darling Range, *Collie;* between Perth and King George's Sound, *Harvey.* The upper leaves are often here and there opposite, as in a few other *Lasiopetala.*

18. **L. molle,** *Benth.* Branches hoary or rusty-tomentose. Leaves petiolate, cordate, from orbicular and very obtuse to ovate-acuminate or almost lanceolate, but never acute, 1 to 2 in. long, or in some specimens under 1 in., entire or sinuate, thick, soft and much-wrinkled, scabrous-pubescent above, densely tomentose underneath. Cymes little-branched, loose, and several-flowered, but scarcely exceeding the leaves. Bracteoles solitary, broadly ovate, membranous and coloured, 3 to 4 lines long, close to the calyx. Calyx loosely tomentose-villous, the segments fully 3 lines long, including their long points, glabrous inside. Petals none. Anthers nearly sessile. Ovary tomentose; style scopiform.

W. Australia, *Drummond, n.* 26 and 108.

19. **L. membranaceum,** *Benth.* A low shrub, the young branches hispid with stipitate stellate hairs, and slightly tomentose. Leaves petiolate, deeply cordate, ovate or orbicular, obtuse, 1 to 2 in. long, rigidly membranous, much wrinkled, green on both sides, and more or less sprinkled with rigid stellate hairs. Cymes forked, pedunculate, usually longer than the leaves, hirsute and apparently viscid. Bracteoles solitary, ovate, acuminate, membranous and coloured, inserted below the middle or near the base of the pedicel. Calyx tomentose-villous outside, the segments ovate-lanceolate, less acuminate than in *L. bracteatum*, to which this species is closely allied, differing chiefly in the indumentum.—*Corethrostylis membranacea*, Steud. in Pl. Preiss. i. 236; Steetz, l. c. ii. 343.

W. Australia, *Drummond, n.* 155, *Oldfield;* sandy woods, Port Leschenault, *Preiss, n.* 1656.

20. **L. bracteatum,** *Benth.* A shrub of 2 ft. or more, the branches tomentose and hirsute with long brown stellate hairs. Leaves broadly ovate-cordate, usually rather acute, 1 to 2 in. long, entire or the margins slightly crisped, thinly coriaceous, scabrous or glabrous, and not wrinkled above, tomentose and sometimes hirsute underneath. Cymes forked, many-flowered, longer than the leaves, hirsute. Bracteoles solitary, ovate, membranous and coloured, inserted below the middle or near the base of the slender pedicels. Calyx hirsute outside at the base, the segments about 4 lines long, with long fine points, glabrous within, dark coloured and somewhat thickened at the base, less deeply separated in this and the last species than in most others of the genus. Petals usually none. Anthers nearly sessile. Ovary tomentose; style scopiform.—*Corethrostylis bracteata*, Endl. Nov. Stirp. Dec. 1; Steetz, in Pl. Preiss. ii. 343; Bot. Reg. 1844, t. 47; *C. coriacea*, Steud. in Pl. Preiss. i. 236.

W. Australia. Swan River, *Huegel*, *Drummond*, 1*st Coll.* and 2*nd Coll. n.* 65; *Preiss, n.* 1637.

19. LYSIOSEPALUM, F. Muell.

Sepals 5, petal-like, quite free, valvate in the bud, and then enclosed in the thick valvate bracteoles. Petals 5, minute and scale-like. Stamens 5, free,

opposite the petals, without intervening staminodia. Anthers opening at the top in pores or short slits, sometimes extending at length down the sides. Ovary 3-celled, with several ovules in each cell; style simple, glabrous. Capsule shorter than the calyx, opening loculicidally in 3 valves, tomentose. Seeds (not seen ripe) like those of *Thomasia.*—Shrubs, with nearly the habit of *Thomasia angustifolia* and its allies. Stipules very small and cordate or none.

The genus is limited to Australia, and remarkable for the calyx-like bracts and petal-like sepals.

Leaves almost or quite sessile. Bracteoles ovate . . . . 1. *L. Barryanum.*
Leaves distinctly petiolate. Bracteoles oblong or lanceolate . . . . 2. *L. rugosum.*

1. **L. Barryanum,** *F. Muell. Fragm.* i. 143. A small shrub, densely clothed with a short soft velvety tomentum. Leaves sessile or nearly so, oblong-linear, obtuse, mostly ½ to ¾ in. long, the margins much revolute, wrinkled and tomentose. Stipules very small and cordate or none. Racemes loose, few-flowered, much longer than the leaves. Bracteoles ovate, 2 to 3 lines long, thick and densely tomentose, completely enclosing the bud, like a valvate 3-sepaled outer calyx. Sepals oblong-lanceolate, 3 or 4 lines long, coloured and petal-like. Anthers acuminate, nearly sessile. Ovary covered with closely-packed oblong scales, with 8 to 10 ovules in each cell.—*Thomasia involucrata,* Turcz. in Bull. Mosc. 1852, ii. 143.

W. Australia. Swan River, *Drummond, 5th Coll. n.* 255; in the interior, *Roe*: Flats of Phillips River, *Maxwell.* In these specimens the flowers are smaller than in Drummond's.

2. **L. rugosum,** *Benth.* A small shrub, closely allied to *L. Barryanum,* and much resembling in habit, foliage, and indumentum, *Thomasia angustifolia.* Branches hoary-tomentose. Leaves shortly, but distinctly petiolate, narrow-lanceolate, obtuse, ½ to 1 in. long, much wrinkled, the margins revolute, slightly hoary above, more densely tomentose underneath. Stipules very small. Racemes slender, several-flowered. Involucre at first ovoid, but lengthening much before the flower expands, the bracteoles at length lanceolate, 4 lines long, thick and tomentose as in *L. Barryanum.* Sepals petal-like, about as long as the bracteoles, broadly oblong. Filaments very short; anthers shortly acuminate. Ovary covered with a close scaly tomentum, with several ovules in each cell.

W. Australia. Swan River, *Drummond.*

ORDER XXIII. TILIACEÆ.

Flowers regular, hermaphrodite or rarely unisexual. Sepals 5, rarely 3 or 4, free or more or less cohering, usually valvate. Petals as many or fewer or none, alternate with the sepals, inserted round the base of the torus. Stamens indefinite, rarely reduced to very few, inserted on the torus, which is often raised or disk-like. Filaments free or slightly united at the base. Anthers 2-celled, with parallel or rarely divaricate cells, opening in longitudinal slits or in terminal pores. Ovary free, sessile, 2- or more celled. Style simple and entire, or divided at the top into as many stigmatic teeth or lobes as there are cells. Ovules 1, 2, or more in each cell, erect, pendulous, or horizontal. Fruit capsular or indehiscent, with single- or several-seeded cells, where several-seeded the cells often subdivided by spurious vertical or transverse partitions. Seeds without any arillus, the testa usually coriaceous or crustaceous. Albumen fleshy, rarely deficient. Embryo straight or rarely curved or slightly folded. Cotyledons leafy or rarely fleshy, the radicle next to the hilum, usually shorter than the cotyledons. Trees, shrubs, or rarely herbs. Leaves alternate or very rarely opposite, simple, with pinnate or palmate nerves, entire, toothed, or rarely lobed. Stipules usually free, and small or deciduous. Flowers axillary, terminal or leaf-opposed, usually in little cymes, often almost umbellate, either solitary and sessile or pedunculate, or arranged in panicles.

A large Order, chiefly tropical or subtropical, spread over both the New and the Old World, with one extratropical genus (*Tilia*) in the northern and another (*Aristotelia*) in the southern hemisphere. The Australian genera are none of them endemic, the extratropical *Aristotelia* is common to Chili and New Zealand. The others are all tropical and Asiatic, *Grewia* extending into Africa and *Corchorus* also partially into America, whilst *Triumfetta* belongs equally to the New and the Old World.

Anthers short, with confluent cells. Calyx irregularly 3- to 5-lobed.
  Petals entire. Capsule loculicidal, each valve 2-winged . . . . 1. BERRYA.
Anthers short, with 2 parallel distinct cells opening longitudinally.
    Sepals distinct. Petals entire.
  Drupe indehiscent, not echinate, entire or 2-lobed. Petals narrow, short, with a foveolate base. Trees or shrubs . . . . 2. GREWIA.
  Fruit globular, echinate, indehiscent, or separating into 1-seeded cocci. Petals narrow, with a foveolate or pubescent base. Shrubs or herbs . . . . 3. TRIUMFETTA.
  Capsule 2-to 5-celled, with several seeds in each, opening in valves, usually long and smooth, rarely short and echinate. Petals usually obovate or broad, without a foveola. Shrubs or herbs . 4. CORCHORUS.
Anthers elongated, opening in terminal valves or pores. Sepals distinct. Petals (except in one species) lobed or fringed.
  Sepals 4, imbricate in 2 series. Capsule echinate, 4-valved . . 5. ECHINOCARPUS.
  Sepals 4 or 5, valvate. Fruit a berry . . . . 6. ARISTOTELIA.
  Sepals 4 or 5, valvate. Fruit a drupe . . . . 7. ELÆOCARPUS.

1. BERRYA, Roxb.

Calyx campanulate, irregularly 3- to 5-lobed. Petals 5, without any foveola at the base. Stamens numerous, free, without staminodia; anthers subglobose, the cells at length confluent into one. Torus not raised. Ovary (2-? or) 3-celled, with 4 ovules in each cell; style subulate (2-? or) 3-lobed (or the styles distinct?). Capsule nearly globular, opening loculicidally in 2 or 3 valves, each valve bearing 2 vertical, diverging, coriaceous wings. Seeds 1 or 2 in each cell, densely covered with rigid hairs; albumen fleshy; cotyledons leafy, flat.—Trees. Leaves entire, 5- or 7-nerved. Flowers small, white, the umbel-like cymes arranged in a terminal panicle.

The genus consists of a single species, common to tropical Australia and Asia.

1. **B. Ammonilla,** *Roxb. Pl. Corom.* iii. 60, *t.* 264, var. *rotundifolia.* A small tree, the young branches slightly tomentose. Leaves cordate-orbicular, very obtuse, 3 or 4 in. diameter, rigidly membranous, glabrous when full-grown. Flowers of the Australian variety unknown, except from some

fragments remaining about the fruits seen by R. Brown, in which he ascertained that the calyx was lobed and the stamens numerous. Capsule (always?) 2-celled, the wings broadly obovate, about ½ in. long, sinuate-crenate on the margin. Seeds 1 or 2 in each cell.

Queensland. Cumberland Islands, *R. Brown* (*Hb. R. Br.*). The shape of the fruit and its wings and the seeds are the same as in the Asiatic *B. Ammonilla*, Roxb., DC. Prod. i. 517, Wight, Ill. t. 34; but as that species has acuminate leaves and a 3-celled capsule, I had at first thought that this one might be distinct. I find, however, some Ceylon specimens with the same rounded leaves, and the Australian specimens are not sufficient to show whether the reduced number of carpels is more than accidental.

2. **GREWIA**, Linn.

Sepals 5, distinct. Petals 5, with a foveola or thickened cavity at the base, usually shorter than the calyx, inserted round the base of the torus. Stamens indefinite, inserted on the raised torus. Ovary 2- to 4-celled, with 2 or more ovules in each cell; style subulate, minutely toothed or lobed. Drupe containing 1 to 4 pyrenes or nuts, entire or 2- or 4-lobed, the nuts either 1-seeded or 2- or more seeded, and then divided by transverse partitions between the seeds. Seeds ascending or horizontal, the albumen usually copious, the cotyledons flat.—Trees or shrubs, the hairs or tomentum stellate. Leaves entire or serrate, 3- to 7-nerved. Stipules narrow, deciduous. Flowers usually yellow, the umbel-like cymes axillary or terminal. In the Australian species (except *G. breviflora*) the ovary is 2-celled, but each cell is subdivided by a vertical, nearly complete partition, so as to appear 4-celled, with two or rarely more superposed ovules in each half-cell, each half-cell forming in the fruit a separate nut, with 1 or rarely more superposed seeds in each.

The genus is a large one, widely spread over the tropical and subtropical regions of the Old World. Of the Australian species, 3 extend over tropical Asia, the remaining 5 are endemic.

Leaves glabrous or nearly so, 3-nerved at the base. Flowers hermaphrodite.
  Sepals 7 to 9 lines. Petals small, the foveola very large. Torus elongated. Fruit depressed-globose, not lobed, ½ in. diameter or more . . . . 1. *G. orientalis.*
  Sepals about 4 lines. Petals very small, the foveola large. Torus short. Fruit small, 2-lobed (unless reduced to one carpel) . . 2. *G. multiflora.*
  Sepals about 2 lines. Petals more than half as long, the foveola very small. Torus short. Fruit small, entire . . . . 3. *G. breviflora.*
Leaves softly velvety-tomentose underneath, 3 or 5-nerved. Flowers hermaphrodite. Petals small, foveola large . . . . 4. *G. latifolia.*
Leaves white-tomentose underneath or scabrous, 3- or 5-nerved. Flowers polygamo-diœcious.
  Leaves obovate-oblong to lanceolate. Foveolate base of the petals broader than the lamina . . . . 5. *G. polygama.*
  Leaves ovate or orbicular. Foveolate base of the petals small.
    Leaves ovate-cordate, acuminate, often 3 to 4 in. Staminodia in the female flowers numerous, clavate, without anthers . . 6. *G. xanthopetala.*
    Leaves small, ovate-obtuse. Stamens in the female flowers 1 or 2 apparently perfect, without staminodia. Buds not striate . 7. *G. scabrella.*
    Leaves small, orbicular, very scabrous. Buds striate. (Female flowers unknown.) . . . . 8. *G. orbifolia.*

1. **G. orientalis,** *Linn.; W. and Arn. Prod.* 76. A tall, rather weak shrub, glabrous, except a minute tomentum on the young shoots, or sparingly sprinkled on the under side of the leaves and more abundant on the inflorescence. Leaves shortly petiolate, from oval-oblong to oblong-lanceolate, acuminate, 3 to 4 in. long, minutely crenulate, 3-nerved at the base. Peduncles 1- or 2-flowered, axillary or the upper ones forming a short terminal panicle. Sepals rusty-tomentose, 7 to 9 lines long. Petals not half so long, the foveolate base broader than and almost as long as the lamina, pubescent round the edge. Torus elongated. Stamens very numerous. Drupe depressed-globular, $\frac{1}{2}$ to $\frac{3}{4}$ in. diameter, flat-topped, slightly furrowed but not lobed, minutely tomentose with a few short straight hairs intermixed, containing usually 4 nuts, each with 2 or 3 horizontal, superposed seeds, separated by transverse partitions.

N. Australia. Van Diemen's Gulf, *A. Cunningham*; islands of the Gulf of Carpentaria, *R. Brown.*

Queensland. N.E. coast, *Banks and Solander*; Northumberland Islands, *R. Brown.* The species is not uncommon in Ceylon and a part of the Indian peninsula.

Var. *latifolia.* Leaves ovate-cordate, crenate, fruit more densely pubescent. Port Denison, *Fitzalan.*

2. **G. multiflora,** *Juss. in Ann. Mus. Par.* iv. 89, *t.* 47, *f.* 1. A shrub or tree, with rather slender branches, glabrous or sprinkled with a few appressed simple or stellate hairs. Leaves from ovate-acuminate to elliptical-oblong or almost lanceolate, 3 or 4 in. long or sometimes more, serrate, 3-nerved at the base. Peduncles axillary, usually 2 or three together, 2- to 5-flowered. Sepals lanceolate, about 4 lines long, minutely tomentose. Petals very short, the broad foveolate base villous round the edge, not longer than the short torus, the lamina still smaller. Stamens numerous. Ovary hirsute, with 2 superposed ovules in each half-cell. Drupe small, sprinkled with a few rigid hairs, deeply 2-lobed or entire by the abortion of one carpel, with 2 nuts in each carpel, each containing a single seed.—DC. Prod. i. 508.

N. Australia. Port Essington, *Armstrong.*

Queensland. Percy Islands, *A. Cunningham.*

The species was originally described from Philippine Island specimens; our Australian ones agree well with Jussieu's figure, as well as with Cuming's specimens, n. 161, 701, and 1515. The common East Indian *G. sepiaria*, Roxb., as well as *G. prunifolia*, A. Gray, Bot. Amer. Expl. Exp. i. 77; said to be a common shrub on the leeward coast of the Fiji Islands, appear from our specimens to be the same species, which we have also from Java and Singapore, although not included in Miquel's Flora. It is, however, frequently confounded with *G. lævigata*, Vahl, which differs in longer flowers, a more raised torus, and several other points.

3. **G. breviflora,** *Benth.* A large spreading shrub or small tree, the young shoots slightly tomentose, otherwise nearly glabrous. Leaves petiolate, obliquely ovate, acuminate, 2 to 4 in. long, glabrous or slightly scabrous. Peduncles usually 3 or 4 together, 3- to 5-flowered, unequal in length, but rarely exceeding the petioles. Sepals elliptical-oblong, more obtuse than in any other species, not exceeding 2 lines, rather thick, tomentose outside. Petals more than half as long, with a very small foveolate base. Stamens numerous. Ovary hirsute, 2-celled, with 2 superposed ovules in each half-cell. Drupe depressed-globular, quite entire, about 3 lines diameter, glabrous or slightly hairy, broad and flat-topped, the hard almost woody endocarp scarcely

separating into 2 nuts, each one containing when perfect 2 superposed pairs of seeds placed singly in separate compartments, but often fewer by abortion.

N. Australia. Cygnet Bay, *A. Cunningham*; N.W. coast, *Bynoe*; islands of the Bay of Carpentaria, *R. Brown*.

4. **G. latifolia,** *F. Muell. Herb.* A shrub or tree, the branches stellate-tomentose. Leaves petiolate, broadly cordate, ovate, 3 or 4 in. long, irregularly serrate, scabrous-pubescent above and wrinkled, softly tomentose or hirsute underneath. Peduncles 2 or 3 together, 2- to 5-flowered, of unequal length, but scarcely exceeding the petioles. Sepals softly villous, 4 to 5 lines long, acute. Petals about one-third as long, the broad foveolate base as long as the small lamina. Torus considerably elevated. Stamens numerous. Ovary hirsute, 2-celled, with 2 superposed ovules in each half-cell. Fruit depressed-globular, 5 or 6 lines diameter, hirsute when young, at length shining and nearly glabrous, 2-lobed, each lobe containing 2 1-seeded nuts and slightly furrowed between them.—*G. Richardiana*, Hook. in Mitch. Trop. Austr. 383; not Walp.

Queensland. Islands off the N. coast, *R. Brown*; Bustard Bay, *Banks*, Brisbane river, *Fraser*, *F. Mueller*; Moreton Island and Peak Downs, *F. Mueller*; St George's Bridge on the Balonne, *Mitchell*.

The foliage is nearly that of *G. orientalis*, Linn., with the fruit of *G. polygama*, Roxb., and the flowers different from both. In some flowers, I have seen the style divided some way below the dilated fringed stigmas.

5. **G. polygama,** *Roxb. Fl. Ind.* ii. 588. An erect shrub, the branches tomentose or softly hirsute. Leaves almost sessile, from obovate-oblong to oblong-elliptical or almost lanceolate, 2 to 3 in. long, serrate, wrinkled and softly pubescent or scarcely scabrous above, velvety-tomentose underneath. Flowers diœcious, 3 or 4 together on very short peduncles. Sepals about 4 lines long, silky-tomentose outside. Petals about one-third as long, the oblong lamina twice as long as the broad foveolate base. Male fl.: Stamens about 20, on the very hirsute torus, with a very rudimentary pistil or none at all. Female fl.: Stamens very short, with small anthers. Ovary very hirsute, with 2 superposed ovules in each half-cell. Style short, with broad, spreading, fringed stigmatic lobes. Drupe depressed-globular, 5 or 6 lines diameter, hirsute when young, at length smooth and shining, 2-lobed, each lobe containing 2 1-seeded nuts and slightly furrowed between them.

N. Australia. Victoria and Fitzmaurice rivers and Arnhem's Land, *F. Mueller*; Goulburn Island, *A. Cunningham*; islands of the Gulf of Carpentaria, *R. Brown*; Sweers Island, *Henne*.

Queensland. Cape York and Port Molle, *M'Gillivray*; Bay of Inlets, *Banks*; Keppel Bay, *R. Brown*; Percy Islands, *A. Cunningham*; Rockhampton, *F. Mueller*; Port Denison, *Fitzalan*.

The species spreads over a great part of East India.

6. **G. xanthopetala,** *F. Muell. Herb.* Young branches tomentose-hirsute. Leaves shortly petiolate, broadly ovate-cordate, acuminate, the larger ones 3 or 4 in. long, serrate, minutely pubescent above, tomentose underneath or at length nearly glabrous, 5-nerved at the base or rarely 3-nerved. Stipules rather broader than in the other species. Flowers diœcious, in sessile, several-flowered clusters, the males not seen. Female fl.: Sepals 2 to 3 lines long, obtuse, softly villous outside. Petals about half as long, some-

times notched at the top, the foveola at the base small. Torus short. Staminodia very numerous, scarcely exceeding the ovary, clavate, without anthers. Ovary villous, with 2 superposed ovules in each half-cell. Style short, with broad, spreading, fringed, stigmatic lobes. Fruit (only seen young) small, depressed-globular, with 2 1-seeded nuts.

N. Australia. Sandstone rocks, Upper Victoria river, *F. Mueller.*

7. **G. scabrella,** *Benth.* A shrub with the habit of *G. orbifolia*, but the tomentum rather more sparing. Leaves broadly ovate, but not so rounded as in that species nor quite so rigid, 1 to 1½ in. long. Flowers in small sessile clusters, apparently diœcious, the males not seen. Female fl.: Sepals softly tomentose, 2 to 2½ lines long, the buds not striate, as in *G. orbifolia.* Petals nearly as long as the sepals, glabrous, with a small foveola at the base, less distinct than in most species. Stamens 1 or sometimes 2 or 3, apparently perfect, without staminodia. Ovary oblong, villous, with 2 superposed ovules in each half-cell. Style very short, with broad, fringed, spreading, stigmatic lobes.

Queensland. Mackenzie and Dawson rivers, *F. Mueller.*

8. **G. orbifolia,** *F. Muell. Herb.* A much-branched shrub, the young shoots tomentose. Leaves petiolate, nearly orbicular or broadly obovate, very obtuse, irregularly serrulate, ¾ to 1½ in. diameter, 3- or 5-nerved at the base, scabrous-tomentose on both sides. Flowers diœcious, in small sessile clusters. Male fl.: Sepals 2 to 2½ lines long, tomentose, the buds striate. Petals fully ¾ as long, pubescent outside, the foveola of the base not broader than the lamina. Stamens rather short, inserted on the hirsute torus round the small very rudimentary pistil. Female flower and fruit not seen.

N. Australia. Sandstone rocks of the Upper Victoria river, *F. Mueller.*

3. TRIUMFETTA, Linn.

Sepals 5, distinct, usually concave, or with a dorsal point or appendage at the top. Petals 5, thickened and globular, or foveolate at the base, inserted round the base of the torus, rarely wanting. Stamens indefinite, or rarely reduced to 5 or 10, free, inserted on the raised torus; anther-cells opening longitudinally. Ovary 2- to 5-celled, with 2 collateral ovules in each cell; style filiform, stigma minutely 2- to 5-toothed. Fruit globular or nearly so, echinate or bristly, indehiscent or (in species not Australian) separating into cocci. Seeds in each coccus or cell solitary, or, if 2, separated by vertical dissepiments, pendulous, albuminous; embryo straight; cotyledons flat, leafy.—Herbs, undershrubs, or shrubs, with the hairs or tomentum stellate. Leaves serrate, entire, or 3- or 5-lobed. Flowers yellow, in little pedunculate or almost sessile cymes or clusters, either leaf-opposed or lateral, rarely strictly axillary. Petals usually narrow and not exceeding the calyx, especially in the Old World species.

A considerable genus, widely spread over the tropical regions of both the New and the Old World. Of the Australian species, one, a maritime plant, extends to several of the South Pacific islands, the others are all endemic.

Ovary 3- to 5-celled. Fruit 3- to 8-celled, with 1 seed in each cell.

  Leaves round-cordate, entire or lobed. Fruit rather large, with two cells and seeds to each carpel.

    Stems prostrate. Leaves mostly lobed. Sepals 4 to 5 lines with minute pointed appendages . . . . 1. *T. procumbens.*

    Shrub densely woolly-tomentose. Leaves undivided. Sepals above ½ in. with leafy toothed appendages . . . . . . 2. *T. appendiculata.*

  Leaves ovate to lanceolate. Fruit small, with as many cells and seeds as carpels. Erect tomentose shrubs.

    Broader leaves obovate-rhomboid. Calyx appendages ovate-peltate. (Fruit unknown.) . . . . 3. *T. glaucescens.*

    Broader leaves cordate-lanceolate. Calyx appendages small, obtuse. Fruit depressed-globular, 5-celled, nearly glabrous . . . . 4. *T. denticulata.*

    Broader leaves obovate-cordate. Calyx appendages small, acute. Fruit ovoid-globular, 4-celled, very tomentose . . 5. *T. micracantha.*

Ovary 2-celled. Fruit 1-seeded.

    Fruit covered with long soft plumose setæ . . . . 6. *T. plumigera.*

    Fruit very small, scarcely pubescent, shortly echinate . . . 7. *T. parviflora.*

A. Cunningham's herbarium contains also specimens from the N.W. coast of two other species apparently either of *Triumfetta* or *Grewia*, but too imperfect to determine.

1. **T. procumbens,** *Forst.; DC. Prod.* i. 508. Stems procumbent or prostrate and rooting at the joints, often attaining several feet, the branches shortly ascending, tomentose. Leaves petiolate, broadly ovate-cordate or orbicular, obtuse, 1 to 2 in. long, entire, crenate, or more or less deeply divided into 3 or 5 lobes, nearly glabrous above, more tomentose underneath. Peduncles short, few-flowered. Sepals 4 or 5 lines long, with small pointed appendages. Ovary hirsute and papillose, 3- or 4-celled, each cell again divided into 2. Fruit globular, about ½ in. diameter, glabrous or villous, covered with hard conical prickles; endocarp hard, divided into 6 or 8 one-seeded cells.—Guillem. in Ann. Sc. Nat. Par. ser. 2, vii. 365; Hook and Arn. Bot. Beech. 60.

Queensland. Maritime sands, Northumberland Islands, *R. Brown*; Fitzroy Island, *A. Cunningham*; Frankland Islands, *M'Gillivray*; Howick Islands, *F. Mueller.*

The species is found in several islands of the Eastern Archipelago, and the Pacific, where the leaves are usually entire or not very deeply 3-lobed; Cunningham's specimens agree very well with these, in all the others (generally far advanced) the leaves are deeply 3- or 5-lobed, with glabrous fruits.

2. **T. appendiculata,** *F. Muell. Fragm.* iii. 7. Shrubby, the whole plant densely tomentose-villous, or almost woolly. Leaves petiolate, broadly ovate-cordate, obtuse, 2 to 4 in. long, crenate, and sometimes sinuate-lobed, very soft and thick. Peduncles mostly 3-flowered. Sepals above ½ in. long, woolly-tomentose, the dorsal appendages leafy and toothed, spreading, and forming on the bud a kind of cup. Ovary hirsute, 3-celled. Capsule globular, hard, indehiscent, very villous, about as large as in *T. procumbens*, but the prickles not so rigid, and sometimes wearing off; endocarp hard, divided into 6 one-seeded cells.

N. Australia. Nichol Bay, N.W. coast, *F. Gregory*; islands of the Gulf of Carpentaria, *R. Brown.*

3. **T. glaucescens,** *R. Br. Herb.* Shrubby, with tomentose branches. Leaves petiolate, from obovate-rhomboid to lanceolate, acute, or somewhat

obtuse, 1½ to 2 in. long, serrate-crenate, rather thick, roughly tomentose-pubescent above, hoary-tomentose underneath. Peduncles very short, few-flowered. Sepals about 3 lines long, tomentose, the dorsal appendages broadly ovate-peltate, thick and gland-like, forming a radiating disk on the thick truncate buds. Ovary 3-celled. Fruit not seen.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown.* (*Hb. R. Br.*)

4. **T. denticulata,** *R. Br. Herb.* An erect, much-branched shrub, of 2 or 3 ft., the branches tomentose-villous. Leaves petiolate, from ovate-cordate to lanceolate, acute, 1½ to 3 in. long, slightly serrate-crenate, scabrous-pubescent above, tomentose underneath. Peduncles very short, several-flowered. Sepals about 3 lines long, pubescent, the small glabrous dorsal appendages obovate or cuneate, and quite distinct round the top of the truncate buds. Fruit depressed-globular, about 2 lines diameter, umbilicate, glabrous or nearly so, tuberculate or muricate with minute fine prickles, 5-celled, with 1 ovule in each cell.

N. Australia. Cavern Island and Groote Eyland in the Gulf of Carpentaria, *R. Brown.* (*Hb. R. Br.*)

5. **T. micracantha,** *F. Muell. Fragm.* iii. 7. Shrubby, erect, the branches closely tomentose or almost villous. Leaves petiolate, from broadly obovate-cordate to narrow rhomboid-oblong, or the upper ones lanceolate, the larger ones 2 to 3 in. long, serrate, with the lower teeth glandular, soft and thick with a close whitish tomentum or villous-tomentose on both sides. Peduncles about as long as the petioles, with about 4 pedicellate flowers. Sepals about 3 lines long, the dorsal appendage small and pointed. Petals none (in the buds I have opened). Fruit ovoid-globose, scarcely above 3 lines long, densely tomentose, the small prickles often scarcely exceeding the wool; endocarp hard, 4-celled, with one seed in each cell.

N. Australia. Victoria river, Hooker's and Sturt's creeks and Abel Tasman river, *F. Mueller.* There are two forms, differing in the tomentum either close and whitish or dense and almost woolly. The species much resembles in aspect the common African *T. glandulosa*, Forsk. (*T. Vahlii*, Poir., *T. glandulosa*, Lam., and *T. velutina*, Vahl), which however has separable cocci.

6. **T. plumigera,** *F. Muell. Fragm.* i. 69. Shrubby, with erect nearly simple branches, closely or loosely tomentose. Leaves from cuneate-oblong to lanceolate, 1 to 2 in. long, rather thick, and either closely whitish tomentose or roughly tomentose-villous on both sides. Cymes or clusters several-flowered, nearly sessile, or the lower ones pedunculate. Sepals scarcely above 2 lines long, the dorsal appendages small and pointed. Stamens rather numerous. Ovary 2-celled. Fruit 1-seeded (or sometimes 2-seeded?), small, but covered with long soft plumose-villous setæ, which often attain 4 lines when the fruit is ripe.

N. Australia. Montague Sound, *A. Cunningham;* N.W. coast, *Bynoe;* Depot Creek, sources of the Victoria river, *F. Mueller.* The species is nearly allied to the S. African *T. trichocarpa*, Sond., which has however larger flowers, and the setæ of the fruit more than ½ in. long.

7. **T. parviflora,** *Benth.* An erect, rigid herb, the branches stellate-pubescent. Leaves shortly petiolate, narrow-oblong, obtuse, 1 to 1½ in. long,

crenate, wrinkled and roughly pubescent above, tomentose underneath. Flowers minute, in nearly sessile clusters. Sepals scarcely more than 1 line long, with a small dorsal point. Petals rather shorter. Stamens very few (5 according to Brown's notes). Ovary hispid, stigma 2-lobed. Fruit globular, 1-seeded, about 1 line diameter, shortly echinate and slightly pubescent.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown.* (*Hb. R. Br.*)

4. CORCHORUS, Linn.

Sepals 5, rarely 4. Petals as many, without any cavity at the base. Stamens indefinite, rarely few, inserted on a torus scarcely raised, but occasionally expanded in a disk round their base; anther-cells opening longitudinally. Ovary 2- to 5-celled, with several ovules in each cell; style short, simple. Capsule either long without prickles, or short or globular and more or less warted, muricate or echinate, opening loculicidally in 2 to 5 valves, with several seeds in each cell, rarely separated by transverse partitions. Seeds pendulous or horizontal, albuminous; embryo usually curved, with leafy cotyledons.—Herbs, undershrubs, or shrubs, with simple or stellate hairs. Leaves serrate. Peduncles very short, lateral or leaf-opposed, bearing 1 or several flowers. Bracts small. Flowers usually small, yellow.

A considerable genus, of which a few species appear to be limited to tropical America or to Australia, the remainder generally dispersed over various tropical regions in the Old as well as the New World. Of the 13 Australian species 9 are endemic, the remaining 4 are common weeds in tropical Asia and Africa. The fruit in this genus is often indispensable for determining the species.

Annuals (or biennials), glabrous or loosely pubescent.

Capsule globular or ovoid, very obtuse.

Capsule echinate, 3- or 4-celled . . . . 1. *C. echinatus.*

Capsule slightly warted, 2- or 3-celled . . . . 2. *C. hygrophilus.*

Capsule (½ to ¾ in. long) rather thick, angular or winged.

Capsule acute or acuminate, angular but not winged. Stamens numerous . . . . 3. *C. Cunninghamii.*

Capsule 3-winged, truncate at the top, with 3 diverging points. Stamens under 20. Flowers very small . . . 6. *C. acutangulus.*

Capsule linear, not winged.

Capsule ¾ to 2 in. Lower pair of serratures of the leaves ending in fine setæ. Stamens numerous.

Capsule 5-celled, the transverse partitions conspicuous . . 4. *C. olitorius.*

Capsule 3- or 4-celled, without transverse partitions . . 5. *C. tridens.*

Capsule under ½ in., 2- or 3-celled. Leaves without setæ. Flowers very small. Stamens few. Pubescent plants.

Capsule 3-celled, erect or spreading, 3-toothed at the top . 7. *C. fascicularis.*

Capsule 2-celled, reflexed, very hirsute, rather acute . . . 8. *C. pumilio.*

Undershrubs or shrubs more or less tomentose or hirsute.

Fruiting pedicels recurved. Capsule linear, curved or twisted, more or less torulose, 2- or 3-celled.

Low diffuse shrubs or undershrubs. Capsule few-seeded.

Sepals under 2 lines. Stamens about 10. Capsule 3 or 4 lines long, very hispid, slightly curved . . . . . 8. *C. pumilio.*

Sepals under 2 lines. Stamens about 20. Capsule elongated, much twisted, torulose, glabrous . . . . 9. *C. vermicularis.*

Sepals 3 to 4 lines. Stamens numerous. Capsule tomentose, slender but not twisted . . . . 10. *C. tomentellus.*

Erect shrubs. Capsule tomentose, elongated, many-seeded.
  Tomentum scabrous or almost villous. Sepals 2 or 3 lines.
    Petals narrow . . . . 11. *C. sidoides.*
  Tomentum soft, close and hoary. Sepals 4 lines or more.
    Petals broad . . . . 12. *C. leptocarpus.*
Capsule erect, straight, not twice as long as the calyx, 5-celled. 13. *C. Walcottii.*

1. **C. echinatus,** *Benth.* An erect annual, glabrous or nearly so. Leaves petiolate, from ovate-lanceolate to oblong, rather obtuse, serrate, the lowest pair of serratures rarely bearing short setæ. Pedicels 1 to 3, often as long as the petioles, on a very short common peduncle. Buds globular. Sepals $2\frac{1}{2}$ to 3 lines long. Petals broad, rather longer. Ovary obtuse, tuberculate. Capsule ovoid-globular, 3 to 5 lines long, very obtuse, glabrous, densely echinate with short recurved soft prickles, 3- or 4-celled. Seeds usually 6 to 8 in each cell, in two rows, without transverse partitions. —*Triumfetta macropetala*, F. Muell. Fragm. iii. 8.

N. Australia. Hooker's and Sturt's creeks, sources of the Victoria river, *F. Mueller.*

2. **C. hygrophilus,** *A. Cunn. Herb.* A tall, erect, glabrous herb, apparently annual. Leaves petiolate, ovate or ovate-lanceolate, acuminate, 3 to 5 in. long, acutely and irregularly toothed. Cymes several-flowered, reflexed, shortly pedunculate, but rarely equalling the petioles. Flowers small, the buds obovoid, contracted at the base. Petals the length of the calyx. Stamens numerous, on a raised torus. Capsule globular or ovoid-oblong, very obtuse, 2 to 4 lines long, more or less tuberculate, 2- or 3-celled. Seeds 8 or more in 2 rows in each cell, without transverse partitions.

Queensland. Cleveland Bay, *A. Cunningham.*

3. **C. Cunninghamii,** *F. Muell. Fragm.* iii. 8. A tall erect glabrous herb, annual, or sometimes perhaps perennial. Leaves petiolate, from cordate-ovate to lanceolate, acuminate, 2 to 4 in. long, coarsely serrate, without setæ. Peduncles short, bearing a cyme of 3 to 7 or 8 flowers, on rather long pedicels. Buds obovoid, narrowed at the base. Stamens numerous, on a raised torus. Ovary narrowed at the top. Capsule narrow-oblong, acute, $\frac{1}{2}$ to $\frac{3}{4}$ in. long, slightly 3- or 4-angled, 3- or 4-celled, with numerous seeds in each cell.

Queensland. Dawson and Burnett rivers and Moreton Bay, *F. Mueller*; Brisbane river, *Fraser.*

4. **C. olitorius,** *Linn.; W. and Arn. Prod.* 73. An erect annual, of 2 ft. or more, glabrous or nearly so. Leaves from ovate-acuminate to lanceolate, 2 to 3 in. long or more, serrate, the lowest pair of serratures ending in spreading or recurved setæ. Flowers single or 2 together, on very short pedicels, the buds obovoid-globular. Stamens numerous, on a small torus. Capsule linear, often above 2 in. long, slightly 5-angled, 5-celled, with numerous seeds, separated by almost complete transverse partitions.

N. Australia. Van Diemen's Gulf, *A. Cunningham.* The species is common in tropical Asia and Africa.

5. **C. tridens,** *Linn.; W. and Arn. Prod.* 73. A glabrous, hard annual, with decumbent ascending or erect branches. Leaves mostly lanceolate, rather obtuse, 2 to 3 in. long, crenate-serrate, the lowest pair of serratures

terminating in setæ as in *C. olitorius*. Flowers small, nearly sessile, usually 2 or 3 together. Stamens numerous, the torus scarcely raised. Capsule linear, rigid, ¾ to 1½ in. long, straight or curved, glabrous, 3- or 4-celled, and often terminating in as many very short spreading points or teeth. Seeds numerous, without any, or with very imperfect, transverse partitions.

N. Australia. Islands of the N. coast, *R. Brown*; Upper Victoria river, Sturt's and Hooker's creeks, *F. Mueller*. The species is widely spread over tropical Asia and Africa.

6. **C. acutangulus,** *Lam.*; *W. and Arn. Prod.* 73. An annual, sometimes very small, but attaining 2 ft., decumbent or erect, slightly pubescent and often sprinkled with a few rigid hairs. Leaves petiolate, ovate, serrulate, without setæ. Flowers 1 to 3, nearly sessile, and very small. Sepals little more than 1 line long. Stamens 15 to 20. Capsule straight, ½ to ¾ in. long, rather thick, prominently 3-angled, or with 3 longitudinal wings, truncate at the top, with 3 spreading points or teeth, 3-celled. Seeds numerous. Very rarely the capsule has 4 cells, and as many wings and teeth.—Wight, Ic. t. 739.

N. Australia. Upper Victoria river, *F. Mueller*. The species is common in tropical Asia and Africa, and occurs also, perhaps introduced, in some parts of S. America.

7. **C. fascicularis,** *Lam.*; *W. and Arn. Prod.* 72. A small annual, with procumbent or ascending branches, rarely attaining 1 ft., glabrous or loosely pubescent. Leaves petiolate, oblong or lanceolate, ¾ to 1½ in. long, or the lower ones small and broad, slightly serrate without setæ. Flowers very minute, in clusters of 3 to 6, on very short peduncles. Sepals about 1 line long. Stamens 5 to 10. Capsule nearly cylindrical, rarely ½ in. long, usually slightly hairy, terminating in 3 teeth, 3-celled. Seeds several, without transverse partitions.

N. Australia. Victoria river, Sturt's and Hooker's creeks, *F. Mueller*; Arnhem's Bay, *R. Brown* (the latter somewhat doubtful, the specimen very imperfect). The species extends over tropical Africa and Asia, from Senegal to Bengal, and includes *C. brachycarpus*, Guill. and Perr.

8. **C. pumilio,** *R. Br. Herb.* A small rigid, much-branched herb or undershrub, not much more than ½ ft. high, hirsute with spreading stellate hairs, the slender branches appearing almost woody at the base, although the plant flowers the first year. Leaves petiolate, ovate or oblong, obtuse, rarely above ½ in. long, crenate, rugose and plicate, sprinkled with rigid stellate hairs. Flowers very small, in sessile clusters. Buds narrow-oblong. Sepals very narrow, acute, hirsute, 1 to 1½ lines long. Petals narrow. Stamens about 10. Ovary very hirsute. Capsules reflexed, linear, 3 to 4 lines long, slightly curved, rather acute, very hirsute, 2-celled, with few oblong seeds.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*; Upper Victoria river, *F. Mueller*.

9. **C. vermicularis,** *F. Muell. Fragm.* iii. 11. A low shrub or undershrub, with numerous slender branches, like *C. pumilio* in habit, but more diffuse, and rather stellate-tomentose than hirsute. Leaves petiolate, oblong, obtuse, ½ to ¾ in. long, serrate-crenate, rugose and plicate, rather roughly stellate-tomentose. Flowers very small, 2 or 3 together, and shortly pedicellate. Buds obovoid. Sepals linear-cuneate, 1½ lines long. Petals broadly obovoid. Stamens

about 20. Ovary glabrous. Capsule reflexed, linear, slender and very much twisted, contracted between the seeds, 2-valved. Seeds ovoid-oblong, few and distant, the cells usually closed between them.

N. Australia. Upper Victoria river, *F. Mueller.*

10. **C. tomentellus,** *F. Muell. Fragm.* iii. 10. A low, diffuse, stellate-tomentose shrub or undershrub. Leaves petiolate, from ovate to ovate-oblong, obtuse, ½ to 1 in. long, crenate, slightly plicate and rugose, rather loosely stellate-tomentose, especially underneath. Flowers pedicellate, in nearly sessile clusters, much larger than in *C. vermicularis.* Buds obovoid. Sepals 3 to 4 lines long. Stamens numerous, the torus expanded into a prominent disk round their base. Capsule very slender, tomentose, ½ to ¾ in. long, 3-valved, with few distant seeds, but scarcely contracted between them.

Queensland. Mackenzie river, *F. Mueller.* It is possible that this may prove a form of the very variable *C. sidoides,* but besides the difference in habit and foliage, the flowers appear to be larger and the disk much more developed.

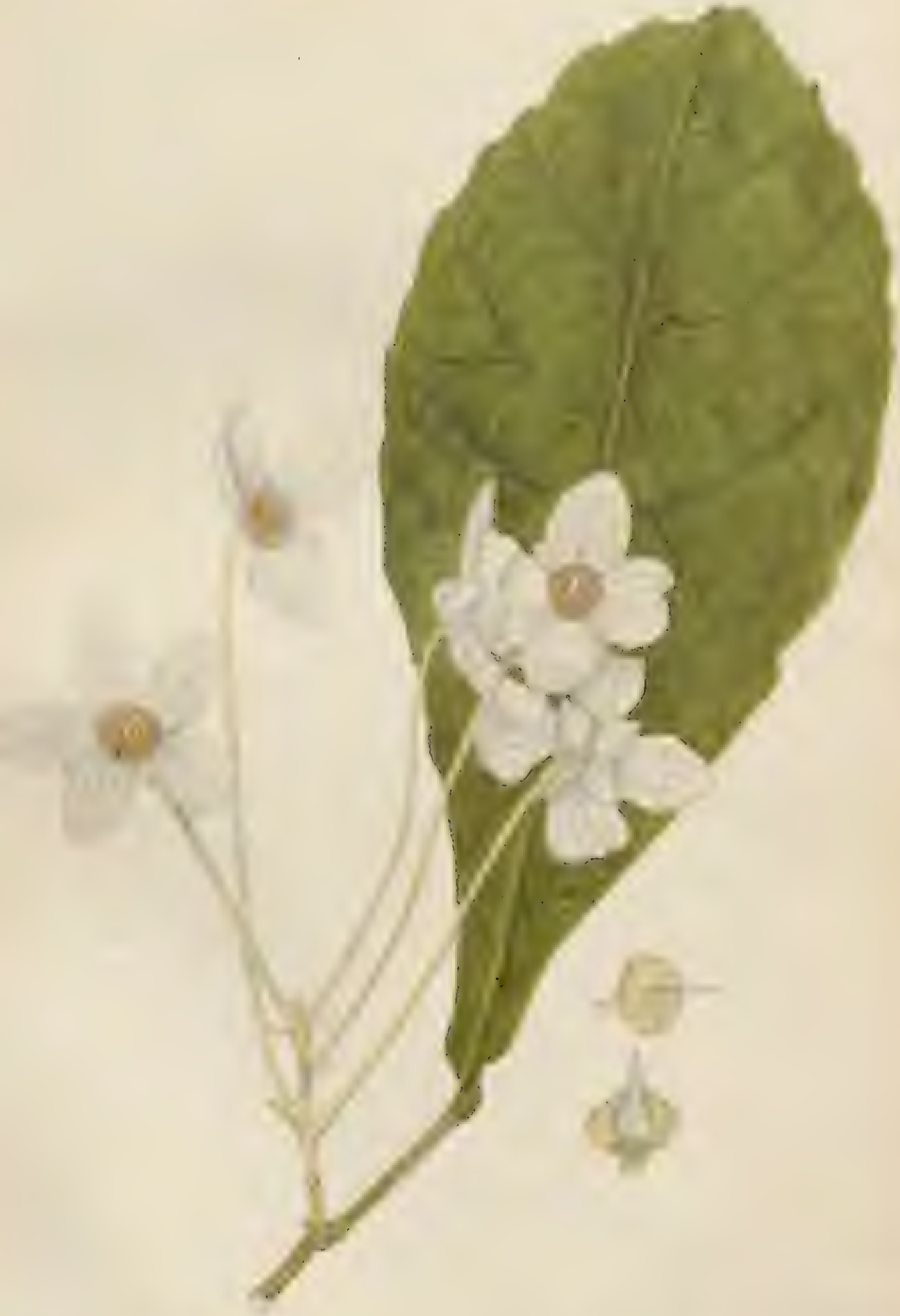
11. **C. sidoides,** *F. Muell. Fragm.* iii. 9. An erect shrub of several feet, the branches densely but rather loosely tomentose. Leaves shortly petiolate, from oval-oblong to oblong-lanceolate, obtuse, 1 to 2 in. long, rather thick, crenate, plicate and rugose or on luxuriant specimens longer and thinner, scabrous-tomentose above, more densely tomentose underneath. Flowers in nearly sessile clusters. Calyx tomentose-villous, 2 to 3 lines long, the buds often tipped by the tooth-like points of the sepals. Petals narrow, in some flowers very small. Stamens numerous, on a small torus. Capsule slender, ¾ to near 2 in. long, tomentose or villous, more or less torulose, 2- or 3-celled. Seeds oblong, often distant in each cell, although rather numerous on the whole.

N. Australia. N.W. coast, *Bynoe;* Cygnet Bay, *A. Cunningham;* frequent in sterile places on the Victoria river, *F. Mueller;* islands of the Gulf of Carpentaria, *R. Brown.*

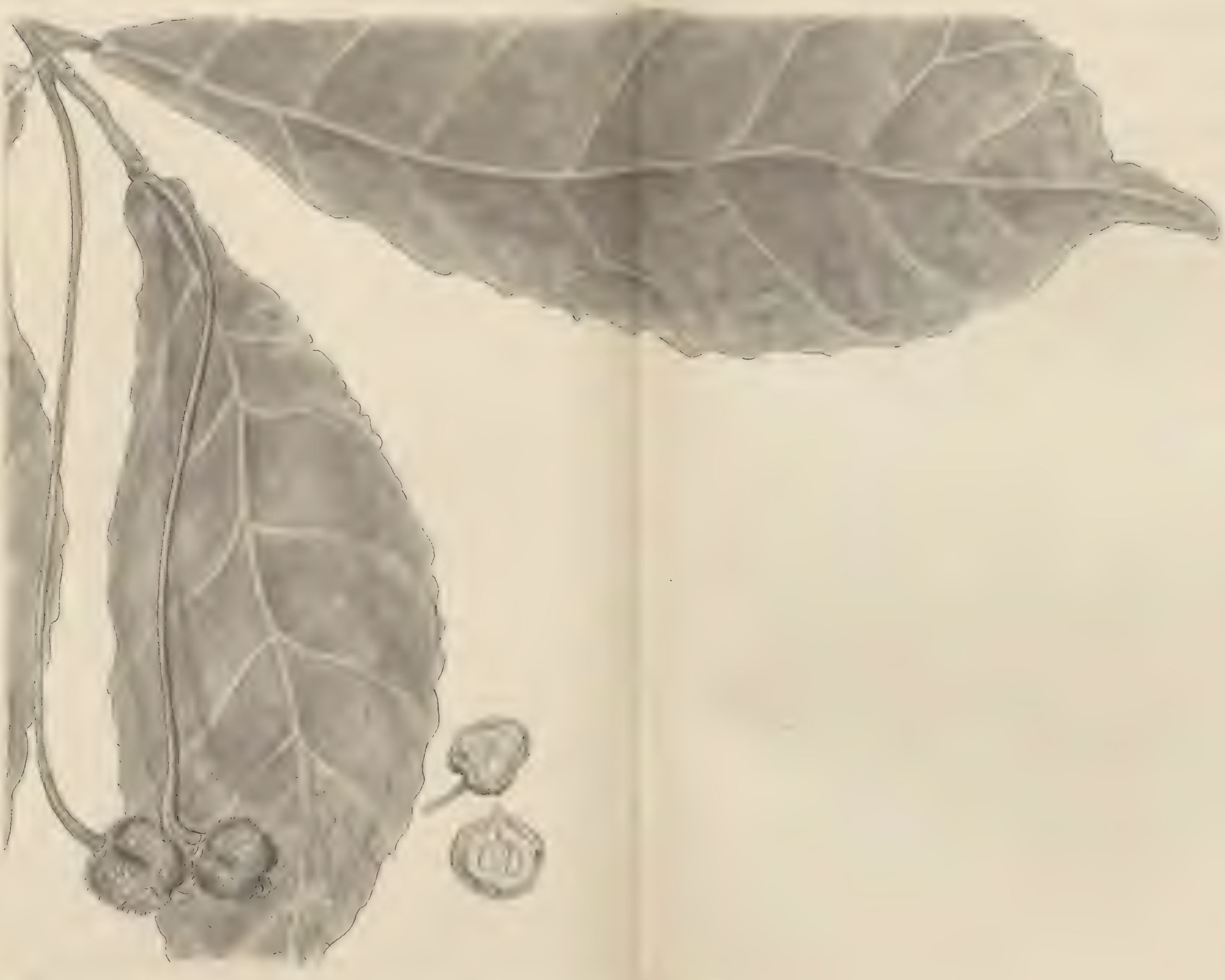
12. **C. leptocarpus,** *A. Cunn. Herb.* An erect shrub of several feet, hoary all over with a minute close tomentum. Leaves petiolate, from ovate to lanceolate, obtuse, 2 to 4 in. long, irregularly crenate, cordate at the base, minutely but softly tomentose on both sides. Flowers in nearly sessile clusters. Buds tomentose, angular, tipped with the long points of the sepals. Sepals 4 lines long or rather more. Petals broad, almost foveolate at the base. Stamens numerous, on a prominent torus. Capsule slender, incurved at the base, densely tomentose, 1 to 1½ in. long, slightly torulose, 3-celled. Seeds numerous, oblong, with incomplete transverse partitions between them.

N. Australia. Water Island, N.W. coast, *A. Cunningham.*

13. **C. Walcottii,** *F. Muell. Fragm.* iii. 9. A shrub or undershrub of 1 to 3 ft., densely and softly tomentose or woolly. Leaves petiolate, from broadly ovate to ovate-oblong, 1½ to 2½ in. long, coarsely toothed or crenate, not cordate, thick, soft and densely tomentose. Peduncles nearly as long as the petioles, with 3 to 6 rather large pedicellate flowers. Sepals woolly-tomentose, 5 or 6 lines long, lanceolate with long soft subulate points. Petals broad. Stamens numerous. Capsule erect and straight, from about



[illegible] australis, [illegible]



the length of the calyx to twice as long, very tomentose, 5-celled. Seeds few, without partitions between them.

N. Australia. Enderby Island, N.W. coast, *A. Cunningham*; Hearson Island and Nichol Bay, *F. Gregory*.

Var. (?) *parviflora*. Leaves smaller, often narrow, tomentum closer, and flowers much smaller. N.W. coast, *Bynoe*; Nichol Bay, *F. Gregory*.

Var. (?) *densiflora*. Foliage various, pedicels very short, flowers intermediate in size. Gulf of Carpentaria, *F. Mueller*. The specimens are insufficient for correctly estimating the constancy of these forms.

5. ECHINOCARPUS, Blume.

Sepals 4, imbricate in two rows. Petals 4, broad, short, imbricate. Stamens numerous, free, covering the broad, thick, pitted disk from the petals to the ovary; anthers linear, the cells placed back to back and opening from the top in a slit extending more or less down the sides. Ovary 3- or 4-celled, with several ovules in each cell; style subulate. Capsule thickly coriaceous or woody, densely echinate or covered with setæ, 3- or 4-celled or 1-celled by abortion, opening in 3 or 4 valves. Seeds several or solitary and pendulous, ovoid; testa hard; albumen fleshy; cotyledons broad, flat.—Trees. Leaves entire or sinuate-toothed, with pinnate veins. Peduncles axillary, 1-flowered, solitary or clustered, rarely forming terminal racemes.

A tropical Asiatic genus, represented in Australia by a single endemic species.

1. **E. australis,** *Benth. in Journ. Linn. Soc.* v. *Suppl.* 73. A tree, attaining 80 ft., glabrous in all its parts. Leaves obovate-oblong, ½ to 1 ft. long, shortly acuminate, more or less sinuate-toothed, much narrowed towards the base, but obtuse or slightly cordate at the petiole, coriaceous. Flowers pendulous, on erect pedicels of 1 to 2 in., the upper ones forming terminal racemes shorter than the last leaves. Sepals ovate-oblong, about 4 lines long. Petals not seen. Anthers scarcely pointed. Capsule opening in 4 hard almost woody valves, about ½ in. long, external setæ short and exceedingly densely crowded. Fully expanded flowers and seeds not seen.

Queensland. Scrub near Dunuduni, Moreton Bay, *W. Hill*.

N. S. Wales. Hastings river, *Beckler* (capsules only seen); Kiama, *Harvey*.

6. ARISTOTELIA, L'Hér.

(Friesia, *DC.*)

Sepals 4 or 5, valvate. Petals as many, imbricate, 3-lobed, toothed or entire, inserted round the base of the thickened torus. Stamens indefinite, inserted on the torus, within a glandular ring; anthers linear, the cells placed back to back and opening from the top in short confluent slits. Ovary 2- to 4-celled, with 2 ovules in each cell; style subulate. Fruit a berry. Seeds few, ascending or pendulous; testa hard, often pulpy outside; albumen fleshy; embryo straight, with flat or undulate cotyledons.—Shrubs. Leaves mostly opposite or nearly so, entire or toothed. Flowers axillary or lateral, in racemes, or in the Australian species solitary or 2 or 3 together, often polygamous.

Besides the 2 Australian species, which are endemic, the genus has 2 from New Zealand and 1 from Chili.

Leaves oblong-lanceolate or rarely ovate-lanceolate, glabrous . . .	1. *A. peduncularis.*
Leaves ovate, acuminate, pubescent underneath	2. *A. australasica.*

1. **A. peduncularis,** *Hook. f. Fl. Tasm.* i. 52. A weak straggling shrub of 2 to 4 or 5 ft., glabrous in all its parts. Leaves irregularly opposite or here and there alternate or in whorls of 3, shortly petiolate, from ovate-lanceolate to oblong or lanceolate, acuminate, 1½ to 3 in. long, serrate. Peduncles slender, 1-flowered, solitary or 2 to 3 together, with a few small leafy bracts at the base. Flowers white, pendulous. Sepals 4 or rarely 5, 3 or 4 lines long. Petals rather longer, broadly cuneate, 3-lobed. Torus tomentose. Stamens 10 to 12, the filaments ciliate at the base; anthers shortly pointed. Berry varying in size from that of a pea to a small cherry.—*Elæocarpus peduncularis,* Labill. Pl. Nov. Holl. ii. 15, t. 155; *Friesia peduncularis,* DC. Prod. i. 520; Bot. Mag. t. 4246.

Tasmania. Derwent river, *R. Brown;* southern and mountainous parts of the island, common in shady places ascending to 4000 ft., *J. D. Hooker.*

2. **A.** (?) **australasica,** *F. Muell. Fragm.* ii. 79. A slender shrub of several feet, with a few soft hairs on the young branches, petioles, and principal veins on the under side of the leaves, otherwise glabrous. Leaves opposite, on slender petioles, ovate, acuminate, 2 to 3 in. long, serrate, 3-nerved at the base. Pedicels slender, really axillary, although sometimes apparently terminal before the intermediate bud has grown out. Flowers unknown. Berry globular, about 4 lines diameter, nearly dry.

N. S. Wales. Mountain woods at the mouth of the Clarence river, *Beckler.* Until the flowers have been seen, the generic identity cannot be considered as certain.

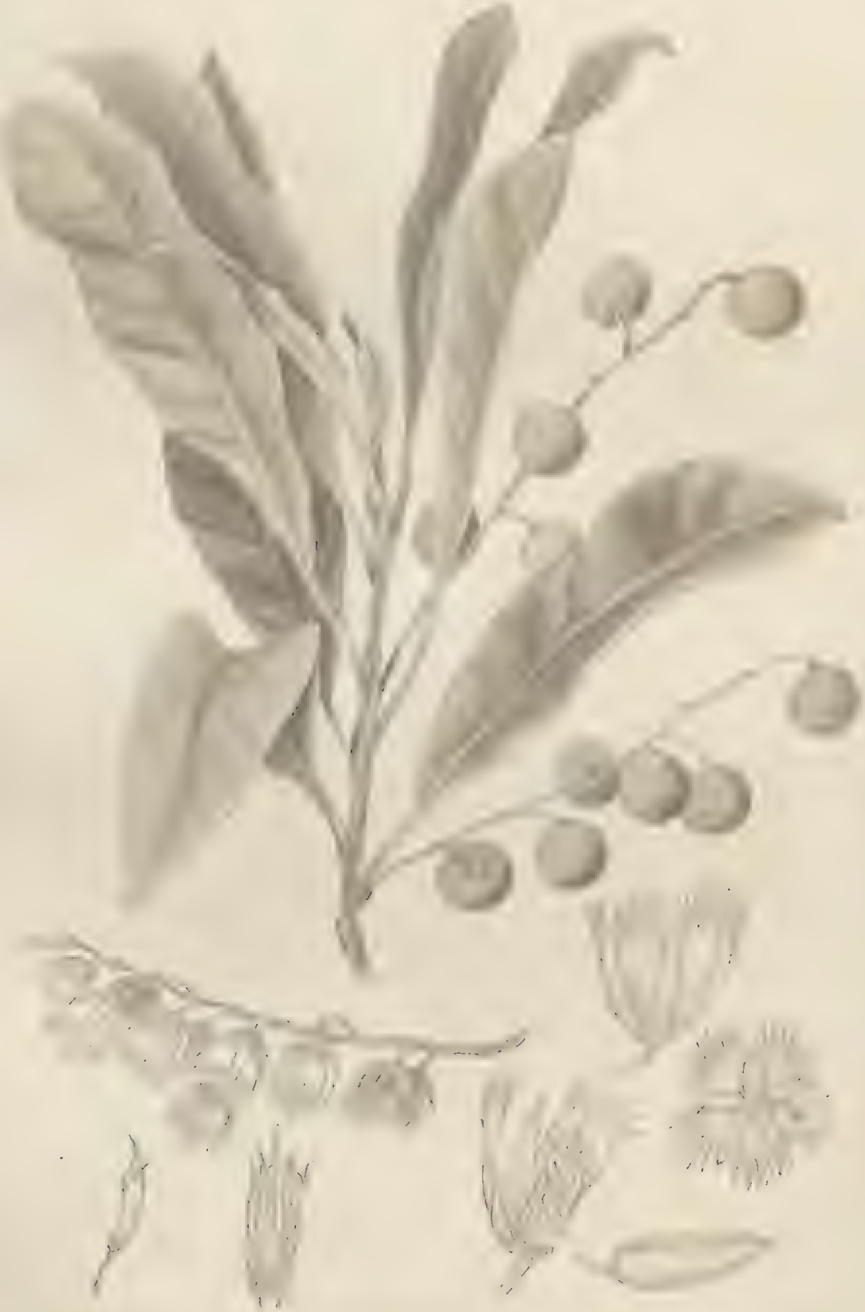
7. ELÆOCARPUS, Linn.

(Monocera, *Jack.*)

Sepals 4 or 5, usually valvate. Petals as many, fringed, lobed or rarely entire, inserted round the base of the torus, induplicate-valvate, and embracing some of the outer stamens in the bud. Stamens indefinite, inserted on the torus, within a glandular ring; anthers oblong or linear, opening at the top in 2 valves (that is, the cells placed back to back and opening in short, terminal, confluent slits). Ovary 2- to 5-celled, with 2 or more ovules in each cell; style subulate. Fruit a drupe, with a hard often bony putamen, 2- to 5-celled or 1-celled by abortion. Seeds solitary in each cell, pendulous (or rarely erect?); testa hard; albumen fleshy; cotyledons broad, flat or undulate.—Trees. Leaves alternate or rarely opposite, entire or serrate. Flowers in axillary racemes, sometimes polygamous.

A large tropical Asiatic genus, extending to the Pacific islands, New Caledonia and New Zealand. The Australian species are all endemic.

Leaves tomentose underneath. Petals entire or slightly crenate . .	1. *E. holopetalus.*
Leaves glabrous. Petals lobed or fringed.	
Flowers about 2 lines. Petal-lobes about 7, obtuse. Anthers short, obtuse	2. *E. obovatus.*
Flowers about 4 lines. Petal-lobes 10 to 12, acute. Anthers linear, pointed. Leaves strongly reticulate	3. *E. cyaneus.*
Flowers 6 or 7 lines. Petals silky on the edges, with about 5 deeply fringed lobes. Anthers linear, with short setæ on their points .	4. *E. grandis.*



1. **E. holopetalus,** *F. Muell. Fragm.* ii. 143; *and Pl. Vict.* i. 153. A tree attaining 80 ft., the young shoots rusty-tomentose or villous. Leaves on very short petioles, oblong-lanceolate or slightly obovate, acute or acuminate, 2 to 4 in. long, sinuate-serrate, coriaceous, reticulate and glabrous above, loosely tomentose underneath or almost glabrous with age. Racemes in the upper axils, tomentose-villous. Pedicels rather long. Sepals 2 to 2½ lines long. Petals rather longer, entire or slightly crenate. Stamens 15 to 20, within a prominent almost cup-shaped disk; anthers pubescent, short, obtuse. Ovary 2-celled.

Victoria. Eastern Gipps' Land, at an elevation of 2000 to 4000 ft., *F. Mueller.*

2. **E. obovatus,** *G. Don, Gen. Syst.* i. 559. A tree attaining 60 ft., glabrous in all its parts. Leaves from oval-elliptical to obovate-oblong or almost lanceolate, obtuse or obtusely acuminate, 2 to 4 in. long, irregularly sinuate-crenate, narrowed at the base, thinly coriaceous, the smaller veins much less numerous and less conspicuous than in *E. cyaneus*. Racemes solitary or clustered, many-flowered, but shorter than the leaves. Flowers small, white. Sepals acute, 1½ lines long. Petals rather longer, divided to about the middle into about 7 linear obtuse lobes. Anthers short, obtuse or scarcely pointed. Ovary glabrous, 2-celled, with 4 ovules in each cell. Drupe globular or ovoid, often blue, the putamen rugose or tuberculate.—F. Muell. Fragm. ii. 80; *E. parviflorus*, A. Rich. Sert. Astrol. 67, t. 24; *E. pauciflorus*, Walp. Rep. i. 364 (a mistake in the name and a wrong station).

Queensland. Brisbane river, Moreton Bay, *W. Hill;* Ipswich, *Nernst.*

N. S. Wales. Port Jackson and Hunter's river, *R. Brown* and others; Hastings and Clarence rivers, *Beckler;* Port Macquarie, *Fraser.*

Var. (?) *foveolatus.* Drupe larger, ovoid, very prominently tuberculate. Flowers not seen.

N. Australia. Islands of the N. coast, *R. Brown;* Liverpool river, *A. Cunningham;* Fitzmaurice river and Macadam range, *F. Mueller.*

3. **E. cyaneus,** *Ait. Epit. Hort. Kew.* A tree, usually small, but attaining sometimes 60 ft. or more, glabrous in all its parts. Leaves elliptical-oblong or oblong-lanceolate, acuminate, 3 or 4 in. long or more when luxuriant, more or less serrate, acute at the base, coriaceous and very conspicuously reticulate. Racemes loose, shorter than the leaves. Sepals acute, 3 to 4 lines long, glabrous. Petals as long or rather longer, divided into 10 to 12 acute lobes, here and there united in pairs. Stamens numerous, within the undulate glandular disk. Anthers linear, the upper valve with a short point. Ovary glabrous, 2-celled, with 8 to 10 ovules in each cell. Drupe usually 1-seeded, globular or ovoid, blue outside, the putamen 4 to 6 lines long, hard and rugose.—DC. Prod. i. 519; Bot. Mag. t. 1737, F. Muell. Pl. Vict. i. 152; *E. reticulatus*, Sm. in Rees' Cycl. xii.; Bot. Reg. t. 657.

Queensland. Moreton Bay, *F. Mueller;* Pine river, *Fitzalan.*

N. S. Wales. Port Jackson, *R. Brown* and others; northward to Mount Lindsay, Macleay and Clarence rivers, *Beckler;* southward to Twofold Bay, *F. Mueller.*

Victoria. Forest gullies of Wilson's Promontory and wooded ranges from the Tambo river to the E. boundary, *F. Mueller.*

Some specimens from the Illawarra, *M^cArthur*, in fruit only, are remarkable for their thick branches, with leaves of 6 to 8 in.

4. **E. grandis,** *F. Muell. Fragm.* ii. 81. A tree of moderate size, gla-

brous, except the young shoots, slightly silky-hairy. Leaves on short petioles, oblong or lanceolate, obtuse or scarcely acuminate, 4 to 6 in. long, crenulate, narrowed at the base, scarcely coriaceous, the smaller veins not prominent. Flowers large, in short dense racemes. Sepals fully ½ in., including their long subulate points. Petals longer, divided into about 5 deeply fringed lobes, silky-pubescent on the margin towards the base. Stamens very numerous; anthers linear, the upper valve pointed and ending in 1 or 2 short, fine setæ. Ovary silky-tomentose (5-celled?), with about 4 ovules in each cell. Drupe (which I have not seen) globular, 1 in. diameter.

Queensland. Pine river, *Herb. F. Mueller.* The large flowers, pubescent petals, and pointed anthers, refer this species to the section *Monocera*, usually considered as a distinct genus, but the group is neither natural nor accurately defined.

ORDER XXIV. LINEÆ.

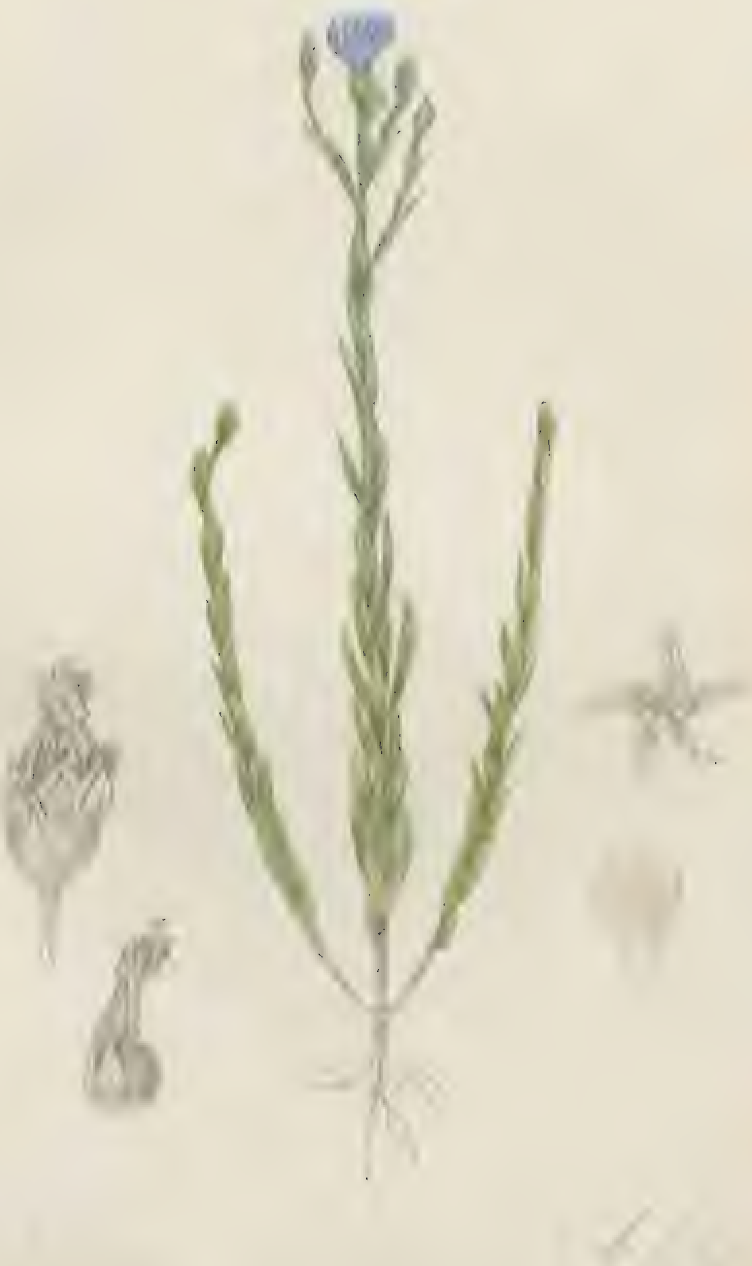
Flowers regular, hermaphrodite. Sepals 5, rarely 4, free or united at the base, imbricate or rarely almost valvate. Petals as many, hypogynous or rarely slightly perigynous, imbricate, usually contorted. Stamens as many as petals or twice or rarely thrice as many, united into a ring or short tube at the base; anthers 2-celled, with parallel cells opening longitudinally. Glands 5, adnate to or embedded in the outside of the staminal tube or rarely wanting. Disk none (besides the staminal tube). Ovary free, entire, 3- to 5-celled. Ovules 2 or rarely 1 in each cell, pendulous, anatropous, with a ventral raphe. Styles 3 to 5, distinct or more or less united, with terminal usually capitate stigmas. Fruit either a capsule, separating into cocci, usually dehiscent, or a drupe, with as many pyrenes as carpels, or more frequently reduced by abortion to 1. Seeds 1 or 2 in each coccus or pyrene; testa membranous or almost coriaceous; albumen fleshy, abundant or thin or entirely wanting. Embryo usually straight, with flat, ovate cotyledons; radicle superior.—Herbs, shrubs, or rarely trees, glabrous or rarely hirsute or tomentose. Leaves alternate or very rarely opposite, simple and entire or slightly serrate. Stipules lateral or within the petiole, sometimes minute or wanting.

An Order, formerly almost limited to the genus *Linum*, but lately extended to include several small Orders or genera, chiefly tropical, from both the New and the Old World. The two Australian genera are the only two large ones, both of them widely dispersed, one chiefly in temperate regions, the other within the tropics.

Herbs. Petals without appendages. Capsule apparently 10-celled,
with 1 seed in each cell. . . . . 1. LINUM.
Shrubs or trees. Petals with an appendage at the base of the lamina.
Drupe 1-seeded . . . . 2. ERYTHROXYLON.

1. LINUM, Linn.

Sepals 5. Petals 5, contorted, without appendages. Stamens 5, perfect; staminodia as many, alternating with the stamens, minute, tooth-like or hair-like, or sometimes scarcely conspicuous. Glands 5, small, scarcely prominent on the staminal tube, opposite the petals. Ovary 5-celled, with 2 collateral ovules in each cell. Capsule dividing into 5 cocci, with 2 seeds in each



separated by an imperfect partition, or into 10 1-seeded cocci when the partition is more complete. Albumen thin.—Herbs. Leaves narrow, entire. Stipules none or minute and gland-like.

A large genus, widely distributed over the temperate or warmer extratropical regions of the globe, with a few tropical American species. The Australian species are endemic, but very closely allied to some of the commonest blue-flowered species of the northern hemisphere.

Sepals acute or acuminate	1. *L. marginale.*
Sepals very obtuse	2. *L. suædæfolium.*

Besides these, *L. gallicum*, Linn.; Planch. in Hook. Lond. Journ. vii. 168, a slender erect annual, with very small yellow flowers in a terminal corymb, a common plant in the Mediterranean region, has established itself as an introduced weed in the neighbourhood of Paramatta.

1. **L. marginale,** *A. Cunn.; Planch. in Hook. Lond. Journ.* vii. 169. A glabrous herb, forming a thick perennial rootstock, but also sometimes apparently annual, with erect or ascending slender stems of 1 to 2 ft., corymbosely branched above the middle. Leaves linear or linear-lanceolate, acute or the lowest almost obtuse, often all under ½ in., but the upper ones sometimes 1 in. long. Stipular glands wanting. Flowers blue, on erect pedicels, forming a loose, irregular, terminal corymb. Sepals ovate or ovate-lanceolate, acute or cuspidate, 2 to 3 lines long, with a strong midrib, the margins thin and often with a narrow scarious border. Petals from a little longer to twice as long. Styles united to above the middle. Capsule dividing into 10 1-seeded cocci.—Hook. f. Fl. Tasm. i. 46; F. Muell. Pl. Vict. i. 178; *L. angustifolium*, DC. Prod. i. 426 (as to the New Holland locality); Bartl. in Pl. Preiss. i. 161.

N. S. Wales. Port Jackson, *R. Brown* and others; northwards to Hastings river, *Beckler;* and in the interior, *A. Cunningham.*

Victoria. Port Phillip, *R. Brown;* throughout the colony, ascending to the Alps, *F. Mueller.*

Tasmania. Abundant throughout the island, *J. D. Hooker.*

S. Australia. From the Murray to Lofty Range and Spencer's Gulf, *F. Mueller* and others.

W. Australia. King George's Sound, *Bagster;* Swan River, *Drummond, 1st Coll.;* Doubtful Island, *Oldfield.* The species very much resembles the northern *L. angustifolium*, Huds., with which many authors have confounded it; but it appears to be constantly distinct in the union of the styles.

2? **L. suædæfolium,** *Planch. in Hook. Lond. Journ.* vii. 168. Apparently an annual, with numerous short erect stems. Leaves crowded, linear, obtuse, 3 or 4 lines long, without stipular glands. Flowers and fruit of the small varieties of *L. marginale*, except that the sepals are very obtuse, those of the lower flowers almost dilated at the top.

Queensland. Balonne river, *Mitchell* (*Herb. Lindl.*). The specimen is very imperfect. It is probably a variety of *L. marginale*, with which some specimens in F. Mueller's Herbarium with less pointed sepals than usual would seem to connect it.

2. ERYTHROXYLON, Linn.

Sepals 5, rarely 6, united into a lobed calyx, or free. Petals as many, with a 2-lobed appendage inside below the lamina. Stamens 10, rarely 12, the basal tube short, without glands, or more or less thickened into 10 glands, the filaments attached inside just below the crenulate top. Ovary 3- rarely 4-celled, with 1 or rarely 2 ovules in each cell. Drupe usually 1-seeded. Albumen copious, or thin, or none.—Trees or shrubs. Leaves entire. Stipules united into one within the petiole, deciduous, or persistent especially on the leafless base of the young shoots. Flowers small, whitish, solitary or clustered in the axil of leaves or of leafless stipules.

A large tropical genus, abundant in S. America, less so in Africa and Asia. The two Australian species are perhaps endemic, but there is so much general similarity in the species of this genus, and their characters so vague and variable, that it is exceedingly difficult to determine their limits.

Leaves oblong or narrow-elliptical, 1 in. long or less, or the smaller ones cuneate-obovate, the veins few . . . . 1. *E. australe.*
Leaves obovate or ovate-elliptical, 1½ to 2½ in. long, or the smaller ones rarely 1 in., the veins numerous and finely reticulated . . . . . 2. *E. ellipticum.*

1. **E. australe,** *F. Muell. in Trans. Vict. Inst.* iii. 22. A glabrous shrub, with slender divaricate branches. Leaves elliptical-oblong, or the smaller ones cuneate or almost obovate, in some specimens all under ½ in. long, in more luxuriant ones about 1 in., the pinnate veins fewer and less reticulate than in many other species. Stipules small and deciduous. Pedicels solitary or rarely clustered, short or rarely attaining 3 lines, with minute bracteoles at their base. Flowers very small. Calyx not 1 line long, divided to below the middle, the lobes almost or quite valvate. Inner appendage of the petals with 2 very short crested lobes. Styles free or shortly cohering at the base. Drupe oblong, 3 to 3½ lines long, 3-celled, but with only 1 seed. Albumen thin; radicle slender, shorter than the ovate cotyledons.

Queensland. Brigalow scrub on the Burdekin, Suttor, and Dawson rivers, *F. Mueller;* Comet river, *Leichhardt;* Rockhampton and Fitzroy river, *Thozet.*

2. **E. ellipticum,** *R. Br. Herb.* A glabrous shrub of above 5 ft., the young branches flattened. Leaves obovate or ovate-elliptical, very obtuse, 1½ to 2½ in. long or the smaller ones rarely only 1 in., on petioles of about 1 line, rather thin, with very numerous and finely reticulated veins. Stipules usually about 2 lines long, and always longer than the petioles, deciduous. Flowers nearly of *E. australe,* very small, in clusters of 3 to 6, the pedicels 2 or 3 lines long, with minute bracts at their base. Calyx about 1 line long, divided nearly to the base into lanceolate acute lobes, very slightly imbricate or almost valvate. Petals slightly exceeding the calyx. Styles quite free. Drupe oblong, 3 to 4 lines long, 1-seeded.

N. Australia. Gulf of Carpentaria, on the mainland opposite Groote Eyland, *R. Brown.* The foliage is nearly that of the largest and broadest-leaved specimens of *E. indicum,* but the styles are quite free.

ORDER XXV. MALPIGHIACEÆ.

Flowers usually hermaphrodite. Calyx 5-cleft, the segments imbricate or rarely valvate, all, or more frequently 4 only (or rarely 3 or none of them), bearing 2 glands outside. Petals 5, usually equal, concave, toothed or notched, on slender claws. Disk scarcely prominent. Stamens usually 10, all perfect, or some of them deformed or without anthers, or sometimes want-

ing, the filaments usually united at the base; anthers 2-celled. Ovary usually 3-celled, or the 3 carpels distinct, with 1 ovule in each, ascending from a pendulous ventral funicle. Styles distinct, or united, or one only developed, with small terminal stigmas. Fruit-carpels 3 or fewer, either united in a berry, drupe, or hard capsule, or more frequently forming separate indehiscent nuts, or winged samaræ. Seeds without albumen, the testa usually membranous and double. Embryo straight or curved; cotyledons thin or fleshy, often unequal; radicle short, superior.—Trees, shrubs, or rarely undershrubs, frequently climbing. Hairs usually closely appressed and fixed by the centre. Leaves mostly opposite, with glands at the top of the petiole, and often on the margin underneath. Stipules usually small, deciduous, or none. Flowers usually yellow, red, or white, in racemes either simple and terminal, or collected in corymbs or umbels, the pedicels articulate on the common peduncle.

A large tropical and subtropical Order, abundant in S. America, much less so in Africa and Asia. The only two Australian species belong to small genera spread over the Eastern Archipelago and S. Pacific islands. Both genera are exceptional as being deprived of the calycine glands so general in the Order.

Carpels with 1 vertical, large, oblong or incurved wing. Flowers in irregular corymbs. Styles 3 . . . . 1. RYSSOPTERYS.
Carpels with several (7 or more) small linear, stellately spreading wings. Flowers in simple racemes. Styles 1 or 2, unequal . . 2. TRISTELLATEIA.

1. RYSSOPTERYS, Blume.

Calyx without glands. Petals scarcely clawed. Stamens all perfect, the filaments thickened at the base; anthers without appendages. Ovary 3-lobed, 3-celled, villous; styles 3, slender, with capitate stigmas. Samaras 1 to 3, expanded at the summit into a wing, of which the upper margin is thickened, tuberculate on the sides below the wing. Seed oblong, with a slightly curved embryo.—Woody climbers. Leaves opposite. Inflorescence terminal or apparently axillary from the reduction of the flowering branches, compound, irregularly corymbose. Peduncles bracteate at the base, with 2 bracteoles at the articulation of the pedicels.

A small genus, dispersed over the Eastern Archipelago, one of the species extending into Australia.

1. **R. timorensis,** *Blume; A. Juss. Malpigh.* 133. A tall climber, the young shoots hoary-pubescent. Leaves on rather long petioles, broadly cordate-ovate or orbicular, obtuse or rather acute, 3 to 5 in. long, somewhat coriaceous, glabrous above when full grown, hoary-pubescent underneath, with 1 or 2 prominent glands at the top of the petiole, those on the margin of the leaf very small. Flowers on pedicels of 2 or 3 lines, in short racemes arranged in irregular corymbs. Bracts and bracteoles very small. Fruit-carpels or samaras pubescent, the lateral tubercles very prominent, the wing broadly semicircular, about $\frac{3}{4}$ in. long and 5 or 6 lines broad.—Deless. Ic. Sel. iii. t. 35.

Queensland. Cape Cleveland, *A. Cunningham;* Fitzroy river, *Thozet.* The specimens are in fruit only, but agree perfectly with those we have in the same state from Timor. Some other species from the Archipelago are closely allied, but differ chiefly in the longer and narrower wing of the samaras.

2. TRISTELLATEIA, Thouars.

Calyx without any or with very minute glands. Petals distinctly clawed. Stamens all perfect, filaments rigid, truncate, and articulate at the top; anthers acute. Ovary 3-lobed, style single or 2, or very rarely 3 unequal ones, the others reduced to small papillæ. Fruit-carpels 3, each one bearing about 7 small linear stellately spreading wings. Seeds obovoid; testa membranous, cotyledons fleshy, hooked.—Woody climbers. Leaves opposite or whorled, the petiole bearing 1 or 2 glands at the top, and minute stipules at the base. Flowers yellow, in terminal or lateral racemes.

A small genus ranging over Madagascar and the Indian Archipelago, one species from the latter region extending into Australia.

1. **T. australasica,** *A. Rich. Sert. Astrol.* 38, *t.* 15. A tall, glabrous climber. Leaves opposite, on rather short petioles, ovate, acute, 2 to 4 in. long, membranous, the glands of the petiole usually single and sometimes wanting. Racemes terminal, loose, 4 to 6 in. long. Pedicels opposite, ½ to 1 in. long, articulate, with 2 minute bracteoles below the middle. Petals 3 or 4 lines long, spreading, the lamina ovate-cordate, the claw slender. Filaments much thickened below the middle, and very shortly united. Fruit (only seen in Archipelago specimens) quite glabrous, the wings of the carpels unequal, the longest often 3 lines long.

Queensland.—Brown's River, *M'Gillivray.*

The species is found in various islands of the Indian Archipelago. The specimens described under the name of *Platynema laurifolium* by Wight and Arnott, in Jameson's Journal, and inserted in their 'Prodromus,' p. 107, as of doubtful Ceylonese origin, proved afterwards to have been from Singapore.

ORDER XXVI. ZYGOPHYLLEÆ.

Flowers usually hermaphrodite and regular. Sepals 5 or 4, very rarely 6, free or connate at the base, imbricate or rarely valvate in the bud. Petals as many, free, imbricate or contorted, rarely valvate or wanting. Disk convex or depressed, rarely annular or undeveloped. Stamens usually the same or twice the number of the petals, the filaments most frequently with a scale or wings at or below the middle; anthers 2-celled, opening longitudinally. Ovary sessile or shortly stalked, often angular, with as many cells as petals or sepals, rarely more or fewer; style simple, with a simple or rarely lobed stigma. Ovules 2 or more in each cell, rarely solitary, pendulous or ascending, with a ventral raphe. Fruit sometimes drupaceous, never baccate, more usually separating into indehiscent or 2-valved cocci, the endocarp occasionally separating. Seeds solitary or rarely several, pendulous; testa membranous, crustaceous, or thick and mucilaginous when wetted; albumen usually thin. Embryo as long as the seed, green, straight, or rarely curved; cotyledons oblong or linear, radicle short, superior.—Shrubs, undershrubs, or herbs, the branches usually divaricate and articulate at the nodes. Leaves opposite, or rarely alternate by the abortion of one of each pair, 2-foliolate or pinnate, rarely simple, the leaflets usually entire. Stipules in pairs. Peduncles axillary, 1-flowered, or rarely branching into cymes. Flowers mostly white, yellow, or red.

A small Order, nearly allied on the one hand to *Malpighiaceæ*, on the other to *Geraniaceæ* and *Rutaceæ*, dispersed chiefly over the subtropical regions of both the Old and New World, and most abundant in dry desert or saline regions. The three Australian genera are all common to Africa and Asia, and one of them extends also to Europe and America.

Leaves pinnate. Petals 5, flat. Fruit of 5 hard, indehiscent, usually prickly or tuberculate cocci . . . . 1. TRIBULUS.
Leaves simple. Petals 5, concave. Fruit a drupe with a hard 1-seeded nut . . . . 2. NITRARIA.
Leaves with 2 leaflets or lobes. Petals 4 or 5, flat. Fruit a 4- or 5-angled or winged capsule . . . . 3. ZYGOPHYLLUM.

1. TRIBULUS, Linn.

(*Tribulopis*, R. Br.)

Sepals 5, rarely 6. Petals as many, flat. Disk annular, 10-lobed or sinuate, with a gland at the base of each of the inner stamens, alternating with the petals. Stamens twice as many as petals, the filaments filiform, without appendages. Ovary of 5 or sometimes more cells, with 1 or 2 to 5 superposed ovules in each cell. Fruit separating into as many cocci as carpels, hard, indehiscent, and each usually bearing 2 or more prickles or tubercles.—Herbs, usually prostrate or divaricate and hairy. Leaves abruptly pinnate, opposite, with one of each pair smaller than the other, or sometimes abortive or all alternate. Stipules small, lanceolate, or falcate. Pedicels solitary in the axil of the smaller leaf of each pair, or opposed to the leaf when alternate. Flowers white or yellow.

The genus is dispersed over the greater part of the tropical and warm regions of the globe, extending into Europe and N. America. Of the Australian species, one is abundant in Asia, Africa, and S. Europe, another is most common in tropical America, less so in Asia and Africa, and the other 9 are all endemic.

Leaves, at least the upper ones, opposite. Glands of the disk not very prominent. Ovules 2 or more in each cell. (*Tribulus* proper.)
Cocci rounded at the back, without angular or winged edges.
Cocci with 2 or 4 prickles, rarely minute or deficient.
Leaves almost all opposite. Ovules 3 or 4 in each cell.
Annual. Flowers small. Petals about ¼ in. . . . . 1. *T. terrestris.*
Perennial. Flowers large. Petals about ¾ in. . . . 2. *T. cistoides.*
Lower leaves alternate. Ovules 2 in each cell. Flowers large . . . . 3. *T. ranunculiflorus.*
Cocci covered with numerous nearly equal prickles . . . . 4. *T. hystrix.*
Cocci with prominent almost winged angles, and 2 prickles on the back between them . . . . 5. *T. macrocarpus.*
Cocci broadly winged at the angles, without prickles.
Plant glabrous except the inside of the sepals. Cocci smooth 6. *T. platypterus.*
Plant hirsute. Cocci strongly reticulate on the back and sides . . . . 7. *T. hirsutus.*
Leaves (except *T. minutus*) all alternate. Glands of the disk prominent. Ovules solitary. Fruit pyramidal, the cocci with 2 or 4 tubercles or small prickles below the middle. (*Tribulopis, R. Br.*)
Leaflets 2 pairs, the lowest much smaller. Perfect stamens usually 5 . . . . 8. *T. pentandrus.*

Leaflets about 3 pairs, ovate, the lowest not far from the stem. Anthers 5 short, 5 oblong or linear . . . . 9. *T. bicolor.*
Leaflets about 3 pairs, ovate or lanceolate, the lowest distant from the stem. Anthers 10, nearly similar. Flowers small . . . . 10. *T. Solandri.*
Leaflets 4 to 6 pairs, linear. Anthers 10, similar. Flowers large . . . . 11. *T. angustifolius.*
Leaflets 3 to 6 pairs, small ovate or lanceolate. Leaves mostly opposite. Anthers 10, similar. Flowers very small . . 12. *T. minutus.*

1. **T. terrestris,** *Linn.; DC. Prod.* i. 703. A prostrate annual or biennial, more or less hirsute or silky-hairy, especially the young shoots, the stems extending often to 1 or 2 ft. Leaves opposite, unequal; leaflets of the larger one usually 5 to 7 pairs, obliquely oblong, 3 to 5 lines long. Pedicels shorter than the opposite larger leaf. Flowers small, the sepals rarely attaining 2 lines and often much less, the petals rather longer, but very rarely nearly twice as long. Anthers 10, all small and perfect. Ovules 3 or 4 in each cell. Cocci 5, hard, 2 to 3 lines long, glabrous or hairy, rounded on the back, with 2 marginal, divaricate, horizontal, subulate or conical prickles about halfway up, and often 2 smaller reflexed ones lower down, the rest of the surface usually tuberculate or shortly muricate. Seeds 2 to 4 in each coccus, horizontal and separated by transverse partitions.—Reichb. Ic. Fl. Germ. v. t. 161; F. Muell. Pl. Vict. i. 99; *T. lanuginosus*, Linn.; DC. Prod. i. 704; Wight, Ic. t. 98; *T. acanthococcus*, F. Muell. in Trans. Phil. Soc. Vict. i. 9.

N. Australia. Sturt's Creek, *F. Mueller.*

Queensland. Gilbert river, *F. Mueller.*

N. S. Wales. Darling river, *Dallachy.*

Victoria. At the junction of the Murray and Murrumbidgee, *F. Mueller.*

S. Australia. N. of Lake Torrens, *M'Douall Stuart's Expedition.*

The species is a common weed in S. Europe, temperate Africa, and S. Asia.

2. **T. cistoides,** *Linn.; DC. Prod.* i. 703. A perennial, forming at length a thick rootstock. Branches procumbent or ascending, attaining 1 to 2 ft. Indumentum more silky than in *T. terrestris.* Larger leaf of each pair with frequently 7 or 8 pairs of leaflets. Flowers large, on longer peduncles than in *T. terrestris;* the sepals 3 or 4 lines long, very acute, silky-hairy; the petals obovate, at least ¾ in. long. Anthers usually (perhaps not always) oblong or linear. Fruit like that of *T. terrestris* or rather larger, with 2 or very rarely 4 prickles to each coccus.—A. Gray, Ill. Gen. N. Am. t. 145.

N. Australia. Gulf of Carpentaria, *R. Brown;* Port Essington, *Armstrong;* Albert river and Swears Island, *Henne.*

Queensland. Northumberland Island, *R. Brown;* Port Curtis and Port Molle, *M'Gillivray;* Lord Howick's group, *F. Mueller;* Port Denison, *Fitzalan.*

N. S. Wales. Liverpool plains, *Leichhardt.*

The species is frequent in the West Indies and many parts of tropical America, and in the Pacific islands, rare in tropical Asia and Africa.

3. **T. ranunculiflorus,** *F. Muell. Fragm.* i. 48. An annual, with procumbent or ascending stems, hirsute with spreading hairs. Lower leaves alternate, upper ones opposite, the larger one of each pair with about 8 or 10 pairs of obliquely lanceolate leaflets, more or less silky-hairy. Flowers

large, on rather long pedicels. Sepals very acute, 3 to 4 lines long. Petals more than twice as long. Anthers short, ovate. Ovary very hirsute, with only 2 ovules in each cell. Fruit about 3 lines long, the cocci slightly muricate and often with 2 short prickles, containing each 1 or 2 seeds separated by a transverse partition.

N. Australia. Dry sandy pastures on the Upper Victoria river, *F. Mueller.*

4. **T. hystrix,** *R. Br. in App. Sturt. Exped.* 6. A diffuse or prostrate perennial or undershrub, the branches densely tomentose-hirsute or woolly. Lower leaves (at least in some specimens) alternate, upper ones opposite, the larger one of each pair with 6 to 8 or even more pairs of leaflets, rather broad and softly silky-hairy. Flowers smaller than in *T. cistoides*, but much larger than in *T. terrestris*, the petals generally about ½ in. long. Ovary very hirsute, with 3 or 4 ovules in each cell. Cocci very villous, covered all over with hairy prickles, either subulate from the base or more or less thickened and conical.—*T. occidentalis*, R. Br. l. c. (from the short diagnosis given).

N. Australia. N.W. coast, *A. Cunningham;* on sandy soil, in the interior from Nichol Bay, *F. Gregory.*

S. Australia. Towards Spencer's Gulf, *Warburton.*

The specimens I have seen are most of them very incomplete, and those described by R. Brown unfortunately mislaid. The few fruits on Gregory's specimens show, however, that the character relied on by R. Brown for the distinction of *T. hystrix* and *T. occidentalis*, the subulate or conical prickles of the fruit, does not hold good. In M'Douall Stuart's collection is a fragmentary specimen from Fink river, with a much larger flower, which may possibly be a variety of the same species, but is indeterminable without the fruit.

5. **T. macrocarpus,** *F. Muell. Herb.* Foliage and flowers unknown. Cocci quite glabrous, nearly ¾ in. long, the edges bordered by narrow, vertical, hard, slightly denticulate wings, with 2 straight, horizontal, conical prickles on the back about halfway up and a vertical prominent rib between them, the sides smooth.

N. Australia. In the interior, from Nichol Bay, *F. Gregory.*

6. **T. platypterus,** *Benth.* A shrub of 2 to 3 feet, glabrous, except the inside of the sepals, the older branches in one specimen corky. Leaves opposite, the larger one of each pair with about 5 or 6 pairs of obtuse leaflets. Pedicels rather short. Sepals very acute, at least 4 lines long, bright-green and glabrous outside like the rest of the plant, woolly-hairy inside. Petals narrow, about ½ in. long. Fruit about ½ in. long and ¾ in. broad, including the wings, truncate rather than cordate at the base; the cocci glabrous or very slightly hairy, bordered by broad, vertical, semicircular, membranous wings, and smooth between the wings and on the sides.

N. Australia. Hammersley range, *F. Gregory.*

7. **T. hirsutus,** *Benth.* A shrub allied to *T. platypterus* and considered by F. Mueller as a variety, but the branches, leaves, and inflorescence are hirsute with long fine spreading hairs; the flowers are rather smaller; the sepals hirsute outside, not woolly inside, but hirsute along the middle with straight hairs; the wings of the fruit form rounded auricles at the base, giving the outline a cordate form; and the cocci are prominently reticulate, almost muricate, both on the back between the wings and on the sides next to the adjoining cocci.

N. Australia. Nichol Bay, *F. Gregory.*

8. **T. pentandrus,** *Benth.* A slender, prostrate, branching annual, often attaining 1 ft. in length, more or less hairy. Leaves all alternate, with 2 pairs of oblong-lanceolate leaflets, the terminal ones 4 to 8 lines long, the lower pair much smaller, usually not half the size. Flowers small, on slender pedicels. Petals oblong. Stamens usually 5 with globular or ovoid perfect anthers, and 5 small with imperfect capitate anthers, or entirely wanting. Ovules solitary in each cell of the ovary. Fruit pyramidal, 1 to 1½ lines long, with 2 small tubercles at the base of each coccus.—*Tribulopis pentandra,* R. Br. in App. Sturt, Exped. 7; F. Muell. Fragm. i. 48.

N. Australia. Victoria river and Sea Range, *F. Mueller;* islands of the Gulf of Carpentaria, *R. Brown.*

9. **T. bicolor,** *F. Muell. Pl. Vict.* i. 99. A prostrate annual, often attaining 1 ft. or more, pubescent or hairy. Leaves all alternate, with 2 or 3 pairs of rather broad leaflets, 2 to 4 lines long, nearly equal, the lowest pair usually close to the stem, glabrous except the ciliate margins. Flowers small, on rather short pedicels. Petals oblong, red at the base according to F. Mueller, but the difference of colour does not show in the dried state. Stamens usually 5 with small short anthers, and 5 with linear anthers, some of them occasionally imperfect. Ovules solitary in each cell of the ovary. Fruit pyramidal, about 2 lines long, pubescent, with 2 pairs of tubercles below the middle of each coccus.—*Tribulopis bicolor,* F. Muell. Fragm. i. 47.

N. Australia. Sandy shores of the Victoria river, *F. Mueller.* This species appears to me to be much more nearly allied to *T. Solandri* than the *T. angustifolius.*

10. **T. Solandri,** *F. Muell. Pl. Vict.* i. 99 (partly). An annual, with prostrate or ascending stems, pubescent or nearly glabrous. Leaves alternate; leaflets usually 3 pairs, rarely 2 pairs, obliquely ovate or oblong-falcate, 3 to 6 lines long, the lowest pair distant from the stem and nearly of the size of the others, all glabrous except the ciliate margins or slightly hairy, those of the upper leaves sometimes narrower and lanceolate. Flowers small. Stamens usually all perfect, with small anthers. Fruit pyramidal, about 3 lines long, glabrous or slightly tomentose, with 2 pairs of prominent reflexed tubercles below the middle of each coccus.—*Tribulopis Solandri,* R. Br. in App. Sturt, Exp. 7.

N. Australia. Victoria river and Gilbert river, *F. Mueller.*
Queensland. Endeavour river, *Banks;* Lizard island, *M'Gillivray.*

11. **T. angustifolius,** *Benth.* An annual or according to some specimens forming a perennial rootstock, with procumbent, ascending, or erect stems, glabrous or silky-pubescent. Leaves all alternate; leaflets 4 or 5 pairs or sometimes more, linear, attaining 1 in. in length, more or less silky-pubescent. Flowers much larger than in the other species, the petals usually exceeding ½ in. Stamens all perfect, with small anthers. Fruit 3 lines long, besides the rigid persistent style which is about as long, with 2 minute tubercles at the base of each coccus.—*Tribulopis angustifolia,* R. Br. in App. Sturt, Exped. 7; *Tribulopis Solandri,* F. Muell. Fragm. i. 47 (partly); *Tribulus Solandri,* var. *angustifolia,* F. Muell. Pl. Vict. i. 99.

N. Australia. N.W. coast, *Bynoe;* Victoria river, *F. Mueller;* islands of the Gulf of Carpentaria, *R. Brown, Henne.*

12. **T. minutus,** *Leichh. in Herb. F. Muell.* Pubescent, apparently prostrate, and more slender than any other species. Leaves mostly opposite, those of each pair unequal or one occasionally abortive, the larger one of 3 to 5 pairs of obovate or oblong leaflets, about 2 or rarely 3 lines long. Flowers very small. Stamens 10, with the anthers all similar. Glands prominent. Ovules solitary (or sometimes 2 ?) in each cell. Fruit nearly of *T. Solandri,* but smaller; each carpel bearing a pair of small, reflexed, conical spines about the middle and a pair of minute tubercles lower down.

Queensland (?), *Leichhardt's Expedition.* This species connects the two groups, having the opposite leaves of *Tribulus* proper, with the fruit of *Tribulopis.*

2. NITRARIA, Linn.

Calyx small, 5-lobed. Petals 5, concave with inflexed points, induplicate-valvate in the bud. Disk not prominent. Stamens 15, rarely 10 to 14, the filaments free, without appendages. Ovary sessile, 2- to 6-celled, terminating in a short thick style, with 2 to 6 adnate stigmas; ovules solitary in each cell, ascending from pendulous funiculi, which are more or less adnate to their inner face. Fruit a drupe, with a berry-like sarcocarp; putamen ovoid-acute, hard, marked outside with irregular depressions, and opening at the top in 6 short, pointed valves, of which 3 inner ones smaller. Seeds solitary, pendulous, without albumen.—Rigid shrubs, often thorny. Leaves alternate or clustered, undivided, succulent. Stipules small. Flowers small, white, in once- or twice-forked scorpioid cymes.

The genus, besides the widely-spread Australian species, comprises one other from Northern Africa. The raphe of the seed is described as dorsal by Spach, but we have always found it ventral in the ovary, although the seed sometimes hangs obliquely.

1. **N. Schoberi,** *Linn.; DC. Prod.* iii. 456. A rigid spreading shrub, attaining 3 to 6 ft., glabrous or hoary with a very minute down, the smaller branches occasionally spinescent. Leaves from cuneate-oblong to lanceolate or linear, the lower ones obtuse and often 1 in. long, those of the smaller branches smaller and more acute, all entire, thick and fleshy. Cymes usually shortly pedunculate, the flowers sessile or shortly pedicellate along the scorpioid branches. Petals about 1½ lines long. Ovary 3-celled. Drupe varying from ovoid-globular to ovoid-oblong, the putamen from ¼ to more than ½ in. long, the depressions in the lower part round or oblong, the upper part marked with 6 furrows, along which the valves ultimately open. Only 1 seed or very rarely 2 come to maturity.—Andr. Bot. Rep. t. 529; *N. Billardieri,* DC. Prod. iii. 456; F. Muell. Pl. Vict. i. 92, t. Suppl. 7; *N. Olivieri,* Jaub. and Spach, Ill. Pl. Or. iii. 143, t. 295; *Zygophyllum australasicum,* Miq. in Pl. Preiss. i. 164.

N. S. Wales. Darling and Murrumbidgee rivers, *Dallachy* and *Goodwin.*

Victoria. Saline tracts on the Murray river, and in the N.W. part of the colony, *F. Mueller.*

S. Australia. Goose Island bay, *R. Brown;* along the coast, and northward to Lake Torrens, *F. Mueller* and others.

W. Australia, *Drummond, n.* 227; Cornac Island, *Preiss, n.* 2397; Murchison river, *Oldfield,* and in several other collections.

The species is spread over the hot, more or less saline, tracts of western Asia and northern Africa. A careful examination leaves no doubt of the identity so often suggested of the Australian and northern plants.

3. ZYGOPHYLLUM, Linn.

Sepals 4 or 5. Petals as many, flat, contracted into a short claw. Disk concave, angular or cup-shaped. Stamens twice as many as petals, inserted at the base of the disk; filaments filiform, with an adnate scale or wing-like appendage at the base, which however is wanting in some of the Australian species. Ovary sessile, 4- or 5-angled, narrowed at the top into an angular style, 4- or 5-celled, with 2 or more superposed ovules in each cell. Fruit capsular, with 4 or 5 angles or vertical wings, indehiscent or separating into cocci or opening loculicidally, the endocarp sometimes separating. Seeds 1 or more in each cell, pendulous; albumen scanty.—Shrubs or undershrubs, often prostrate. Leaves opposite, with 2 distinct leaflets or rarely 2-lobed, frequently fleshy. Stipules small. Peduncles 1-flowered, axillary, solitary or rarely 2 together. Flowers white or yellow.

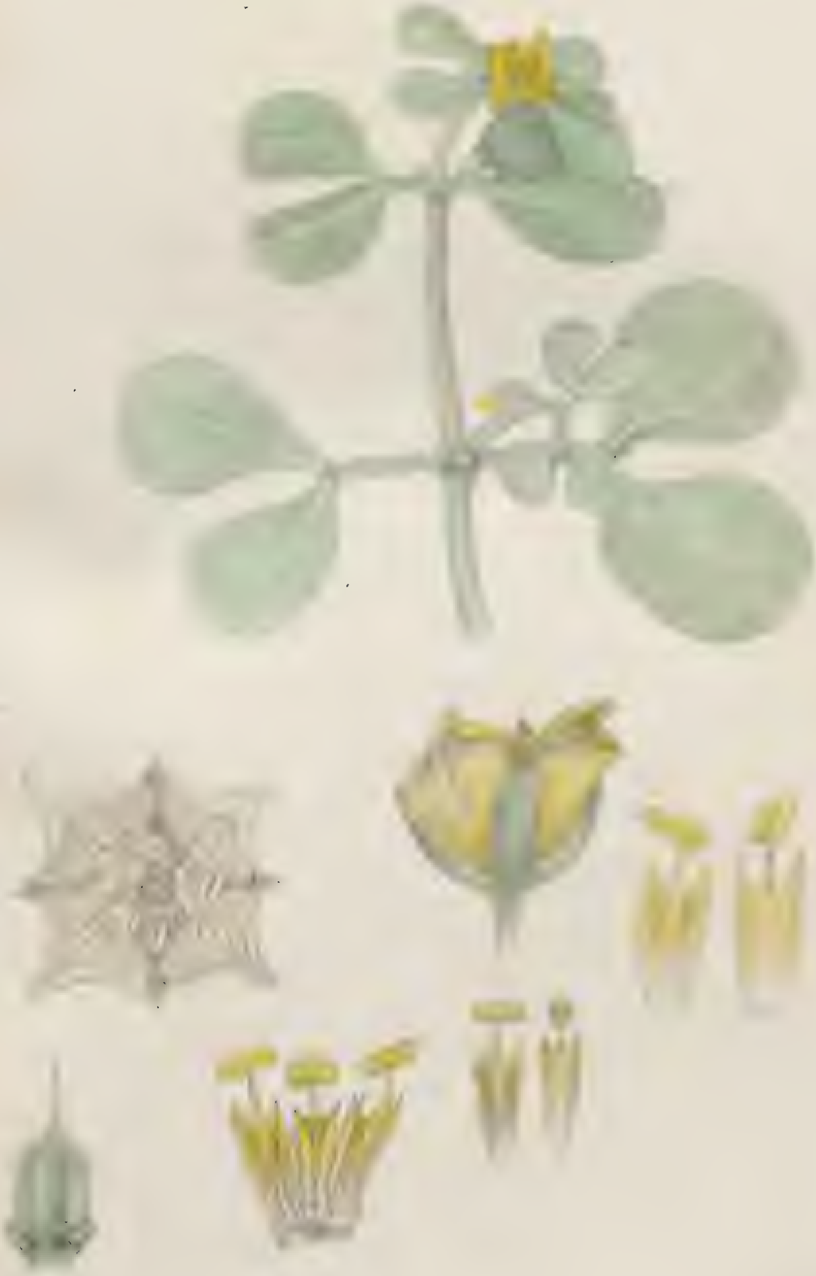
A considerable and widely-spread genus, though confined, with one exception, to the Old World, and chiefly numerous in the desert or saline regions of central and western Asia, North and South Africa. The Australian species are all endemic.

Filaments winged at the base. Capsule angular, loculicidal.
Capsule broad and truncate at the top, the angles usually produced into short appendages. Flowers mostly 5-merous . 1. *Z. apiculatum.*
Capsule equally rounded at the top and the base.
Capsule 4 to 8 lines long, the cells 2- to 4-seeded. Wings of the filaments toothed. Flowers usually 4-merous . . . 2. *Z. glaucescens.*
Capsule 2 to 3 lines long, the cells 1-seeded. Wings of the filaments small and entire. Flowers usually 5-merous . . 3. *Z. iodocarpum.*
Capsule oblong, the angles produced at the top into erect appendages . . . . 4. *Z. prismatothecum.*
Filaments subulate, not winged.
Capsule angular, loculicidal, broad and truncate at the top, narrow at the base . . . . 5. *Z. Billardieri.*
Capsule indehiscent, the angles produced into broad membranous wings . . . . 6. *Z. fruticulosum.*

Varieties with leaves 2-lobed instead of 2-foliolate occur in *Z. iodocarpum, Z. prismatothecum, Z. Billardieri,* and *Z. fruticulosum;* with lobed or crenate leaflets in *Z. glaucescens* and *Z. iodocarpum;* and forms or states with minute flowers in several of the species.

1. **Z. apiculatum,** *F. Muell. in Linnæa,* xxv. 373, *and Pl. Vict.* i. 161. A diffuse, glabrous undershrub. Leaflets 2, obliquely obovate or rarely oblong, ½ to 1 in. long, on a short common petiole. Flowers usually 5-merous. Filaments with rather broad wings, adnate to above the middle and toothed at the top. Capsule about 4 lines long, opening loculicidally, broader and truncate at the top, the angles very obtuse, and produced at the upper outer corner into a short obtuse appendage. Seeds usually solitary in each cell.—*Rœpera latifolia,* Hook. f. Fl. Tasm. i. 60; *Zygophyllum terminale,* Turcz. in Bull. Mosc. 1858, i. 437.

Queensland. Mackenzie and Dawson rivers, *F. Mueller* (a very small-flowered variety).



[illegible]

N. S. Wales. Molle's Plains, *A. Cunningham.*

Victoria. Along the Murray river, from the Murrumbidgee downwards, *F. Mueller.*

Tasmania. Islands of Bass's Straits, *Gunn.*

S. Australia. Broughton river, Flinders Range, Spencer's Gulf, *F. Mueller*; Stevenson river, *M'Douall Stuart.*

W. Australia, *Drummond, 5th Coll., n.* 90; towards Sharks Bay, *Oldfield.*

2. **Z. glaucescens,** *F. Muell. Pl. Vict.* i. 228. Herbaceous, diffuse or erect and glabrous. Leaves of 2 broad leaflets as in *Z. apiculatum*, the petiole occasionally winged at the base. Flowers usually 4-merous. Filaments with toothed wings as in *Z. apiculatum.* Capsule usually above ½ in. long, opening loculicidally, the angles equally rounded at the top and the base. Seeds 2 or 3 or sometimes 4 or 5 in each cell.—*Z. glaucum*, F. Muell. in Trans. Vict. Inst. i. 29, and Pl. Vict. i. 102; not of Sonder.

N. S. Wales. Erskine river, *A. Cunningham*; Lachlan river, *Fraser*; Darling river, *Herb. F. Mueller.*

Victoria. Subsaline deserts on the Murray, Wimmera, and Avoca rivers, *F. Mueller.*

S. Australia. Barossa Range, St. Vincent's and Spencer's Gulf, Venus Bay, *F. Mueller.*

Var. *lobulatum.* Leaflets irregularly 2- or 3-lobed or deeply crenate. Flowers and fruit precisely as in the ordinary form.—*Z. crenatum*, F. Muell. in Linnæa, xxv. 374, and Pl. Vict. i. 103, t. 6. On the Lachlan and Murray rivers, and in the interior of S. Australia, *F. Mueller.*

3. **Z. iodocarpum,** *F. Muell. in Linnæa,* xxv. 372, *and Pl. Vict.* i. 105. A small, much-branched, diffuse annual. Leaflets oblong-cuneate or almost linear, very obtuse, rarely ½ in. long, the petiole often 2-winged, especially towards the top. Flowers very small, usually 5-merous, the petals not 2 lines long. Filaments dilated at the base into short, narrow, entire wings, entirely adnate or very shortly free. Capsule 2 or rarely 3 lines long, loculicidal, the angles equally rounded at the top and the base. Seeds solitary in each cell.

N. S. Wales. Between the Darling and the Lachlan rivers, *Burkitt.*

Victoria. On the Murray river below the Murrumbidgee, *F. Mueller.*

S. Australia. Flinders Range and near Lake Torrens, *F. Mueller.*

Var. *lobulatum.* Leaflets irregularly 2- or 3-lobed or toothed.

W. Australia. Champion Bay, *Oldfield.*

Var. *bilobum.* Leaflets continuous with the petiole, as in *Z. prismatothecum.* Capsule rather longer than in the other varieties. W. Australia, *Drummond.*

4. **Z. prismatothecum,** *F. Muell. in Linnæa,* xxv. 375. A much-branched, small annual. Leaves rather thick, the leaflets, in the few specimens seen, short and confluent with the more or less dilated petiole, so as to form a single 2-lobed leaf. Flowers, which I have not seen, small and 4-merous, according to F. Mueller, the filaments dilated at the base and toothed or entire. Capsules nearly sessile, oblong, 4-angular, about 4 lines long, of equal breadth at the base and the top where the angles terminate in small erect leafy appendages. Seeds solitary in each cell.

S. Australia. Dry hills near Arkaba, *F. Mueller.* The very few specimens seen have all the foliage of the 2-lobed varieties of *Z. iodocarpum, Z. Billardieri* and *Z. fruticulosum*, but as in those species there is probably also a variety with normally 2-foliolate leaves.

5. **Z. Billardieri,** *DC. Prod.* i. 705. Herbaceous, prostrate or diffuse and much-branched. Leaflets oblong, cuneate or linear, rarely obovate, ½ to

1 in. long, the petioles not usually winged. Flowers usually 4-merous, the size of those of *Z. apiculatum*. Sepals narrow, very acute. Petals about 3 lines long. Filaments subulate or slightly flattened, but not winged. Capsule 3 to 5 lines long, loculicidal, broad and truncate at the top, narrowed to the base, the angles acute or shortly pointed or scarcely rounded at the upper outer corner. Seeds 1 or rarely 2 in each cell.—Hook. f. Fl. Tasm. i. 60; F. Muell. Pl. Vict. i. 104; *Rœpera Billardieri*, A. Juss. in Mem. Mus. Par. xii. 454 (by inference); *Z. ammophilum*, F. Muell. in Linnæa, xxv. 376, in adnot.

Victoria. Coast rocks and drift sands from Port Phillip to the Glenelg, and on the lower Murray river, *F. Mueller.*

Tasmania. Islands of Bass's Straits, *R. Brown, Gunn,* and others.

S. Australia. Spencer's Gulf, Goose Island Bay and Kangaroo Island, *R. Brown;* southern shores and towards Lake Torrens, *F. Mueller;* Cooper's Creek, *A. Gregory.*

W. Australia. From King George's Sound to Swan River and Champion Bay, *Drummond, Oldfield,* and others.

Var. *bilobum.* Leaflets narrow, continuous with the petiole, as in *Z. prismatothecum.* On the Murray river and Holdfast Bay, *F. Mueller.*

A minute-flowered form occurs also on the Murray and in West Australia.

6. **Z. fruticulosum,** *DC. Prod.* i. 705. A low diffuse or divaricately-branched shrub. Leaflets obliquely oblong or lanceolate, rarely ovate. Flowers 4-merous, the size of those of *Z. apiculatum.* Filaments subulate, without wings. Capsule ½ in. long, indehiscent, or at length separating septicidally into cocci opening inside, the angles expanded into broad membranous wings, rounded at both ends and not splitting. Seeds solitary in each cell. —F. Muell. Pl. Vict. i. 105; *Rœpera fabagifolia*, A. Juss. in Mem. Mus. Par. xii. 525, t. 15; Deless. Ic. Sel. iii. t. 42; Miq. in Pl. Preiss. i. 164.

W. Australia. Arthur's Head, Swan River, *Preiss, n.* 1953; Port Gregory and Murchison river, *Oldfield.*

Var. *bilobum.* Leaflets narrow, continuous with the petiole, as in *Z. prismatothecum.*—*Rœpera aurantiaca*, Lindl. in Mitch. Three Exped. ii. 70; *Z. aurantiacum*, F. Muell. in Linnæa, xxv. 376 (note).

N. S. Wales, Mitchell; Darling river, *Goodwin* and *Dallachy.*

Victoria. Murray Desert, from the Murrumbidgee downwards, *F. Mueller.*

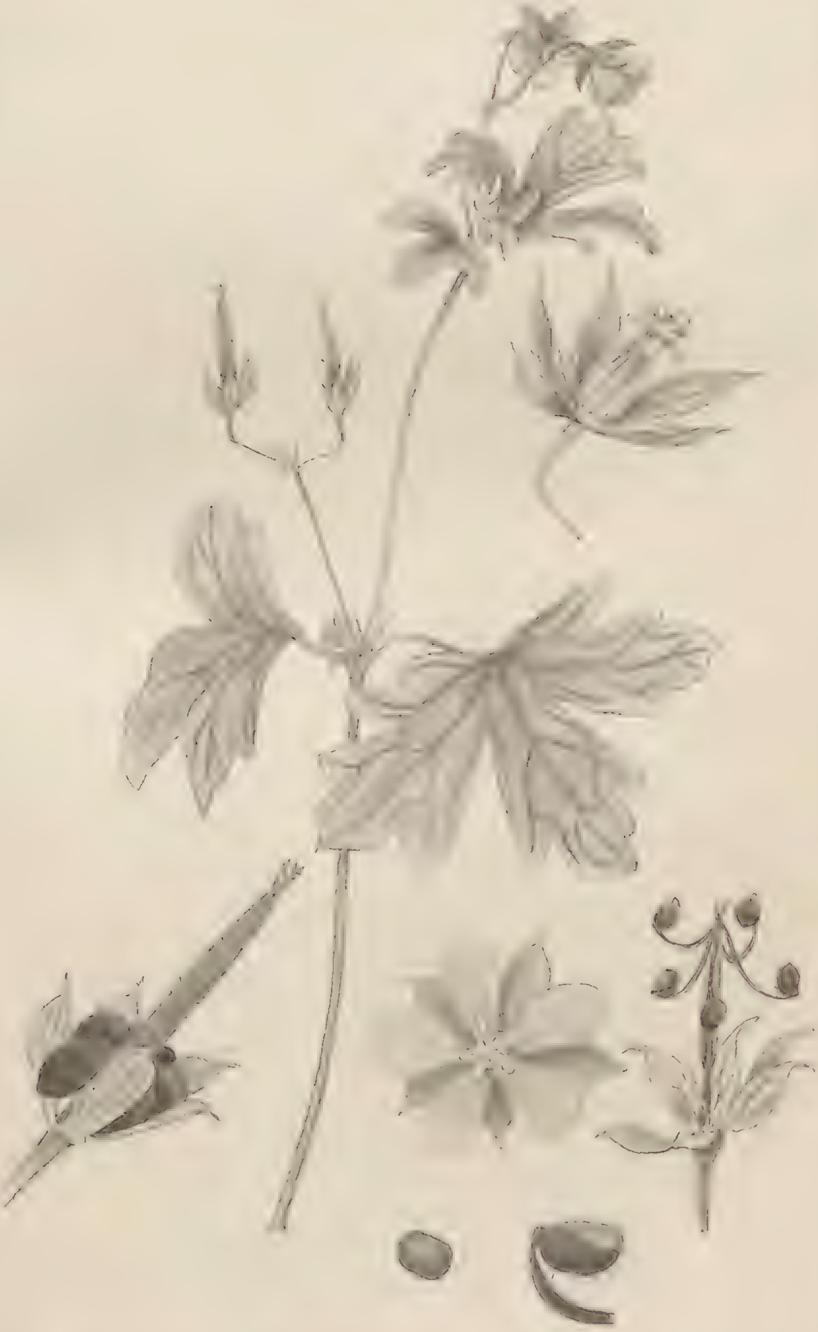
S. Australia. From Spencer's Gulf, *Warburton*, to Flinders Range and Lake Torrens, *F. Mueller.*

W. Australia. Dirk Hartog's Island, *A. Cunningham.*

Var. (?) *platypterum.* Leaflets obovate, as in the broad-leaved specimens of *Z. glaucum.* Fruits winged, as in *Z. fruticulosum*, but very much larger, attaining more than 1 in. diameter. Port Jackson, *Leichhardt* (*Herb. F. Mueller*). The specimen insufficient for accurate diagnosis.

ORDER XXVII. GERANIACEÆ.

Flowers usually hermaphrodite, regular or irregular. Sepals 5, or rarely fewer, free, or rarely connate at the base, imbricate or (in genera not Australian) valvate in the bud. Petals as many or rarely wanting, hypogynous or slightly perigynous, variously imbricate in the bud. Torus more or less expanded into a disk, often bearing 5 glands alternate with the petals, and usually protruding into a short axis in the centre of the ovary. Stamens usually twice the number of the petals, 5 of them occasionally without anthers,



Geranium [illegible] Vol. [illegible]

or rudimentary, or in irregular flowers, 3 or more without anthers or wanting; filaments either free and filiform, or dilated or connate at the base; anthers with 2 parallel cells. Ovary usually 3- to 5-lobed, with as many cells, the carpels adnate to the axis up to the insertion of the ovules, and often produced above that into a beak bearing the style or stigmas; stigmas as many as cells, either raised on the style or sessile on the carpels, radiating from a connate base or rarely entirely connate. Ovules either 1 in each cell or 2 inserted nearly at the same point, 1 ascending, the other pendulous, or several in 1 or 2 rows. Fruit either a lobed capsule, the lobes 1-seeded, separating from the axis with the seed, and elastically rolled upwards along the beak, leaving the placentiferous portion attached to the axis, or the lobes several-seeded, remaining attached to the axis, but opening loculicidally, or, in genera not Australian, the fruit is a berry or separates into indehiscent cocci. Seeds pendulous or ascending; testa thin or rarely crustaceous; albumen usually scanty or none. Embryo straight or curved, radicle short and straight or long and curved or forked over the cotyledons.—Herbs or shrubs, or rarely (in genera not Australian) trees. Leaves opposite or alternate, toothed, lobed, or divided, very rarely quite entire. Stipules usually 2. Peduncles axillary, 1- or 2-flowered, or bearing an umbel of several flowers, very rarely a cyme or raceme.

The Order is chiefly dispersed over the temperate regions of the northern hemisphere, very abundant in Southern Africa, with a few extratropical South American and tropical species. Of the four Australian genera, two are common in the northern hemisphere, a third, although chiefly American, is represented in Australia by species of an extratropical European as well as American type, and the fourth is almost entirely South African. The Order is very closely allied to *Zygophylleæ*.

Capsule beaked, the lobes 1-seeded, and elastically rolled upwards along the beak. Leaves toothed, lobed, or divided.
Flowers regular.
Anthers usually 10. Tails of the carpels glabrous inside . . 1. GERANIUM.
Anthers 5. Tails of the carpels bearded inside . . . . . 2. ERODIUM.
Flowers irregular, with a linear tube or spur adnate to the pedicel.
Anthers 5, 6, or 7 . . . . 3. PELARGONIUM.
Capsule opening loculicidally, the valves adhering to the axis. Leaves with 3 leaflets . . . . 4. OXALIS.

1. GERANIUM, Linn.

Flowers regular. Sepals 5. Petals 5. Glands 5, alternating with the petals. Stamens 10, all usually bearing anthers. Ovary 5-lobed, beaked, the beak terminating in the style, with 5 short stigmatic lobes. Ovules 2 in each cell. Capsule-lobes 1-seeded, separating from the placenta-bearing axis, enclosing the seed, and curled upwards on a long awn detached from the beak, and glabrous inside. Radicle of the embryo turned back on the folded or convolute cotyledons.—Herbs, rarely undershrubs. Leaves opposite or alternate, toothed, lobed, or divided, the lobes or segments palmate, or rarely (in species not Australian) pinnate. Peduncles axillary or in the forks, 1- or 2-flowered.

A large genus, widely distributed over nearly the whole globe, but more abundant in the northern hemisphere, and rare within the tropics. Both the Australian species are also in New Zealand and S. America, and one of them extends up the whole length of that continent to the N.W., and in a slight variety also over most temperate parts of the northern hemisphere. Neither of them occurs in S. Africa.

Flowering-stems elongated and leafy. Seeds reticulate . . . 1. *G. dissectum.*
Flowering-stems undeveloped or short. Seeds quite smooth . . 2. *G. sessiliflorum.*

Besides these, *G. molle*, Linn.; DC. Prod. 1643, a European annual weed, with orbicular leaves divided to the middle only, small flowers with deeply notched petals, wrinkled capsule-lobes, and smooth seeds, has established itself in some parts of Tasmania.

1. **G. dissectum,** *Linn.; DC. Prod.* i. 643, var. *australe.* Usually perennial, forming at length a thick rootstock, descending into a taproot. Stems diffuse, procumbent or shortly erect, more or less hairy with spreading or reflexed hairs, or hoary with a short pubescence. Leaves on long petioles, nearly orbicular in their circumscription, deeply divided into 5 or 7 segments, each one again more or less cut into 3 or more lobes, varying from broadly cuneate-oblong to linear, and usually pubescent or hairy, especially underneath. Peduncles 2-flowered, or rarely 1- or 3-flowered. Sepals 3-nerved, obtuse, acute, or very shortly mucronate; usually 2 or 3 lines long. Petals cuneate-obovate, entire or slightly notched, from rather longer than the sepals to twice as long. Anthers all perfect. Lobes of the capsule sprinkled with hairs, not wrinkled. Seeds covered with minute reticulations or rarely smooth.—Hook. f. Fl. N. Zeal. i. 39, and Fl. Tasm. i. 56; F. Muell. Pl. Vict. i. 173; *G. pilosum*, Forst.; DC. Prod. i. 642; Nees, in Pl. Preiss. i. 162; *G. parviflorum*, Willd.; DC. Prod. i. 642; *G. philonothum*, DC. Prod. i. 639 (from the character given); *G. potentilloides*, L'Hér., DC. Prod. i. 639; Hook. f. Fl. N. Zeal. i. 40; Fl. Tasm. i. 57; *G. australe*, Nees, in Pl. Preiss. i. 162.

N. S. Wales. Port Jackson, *R. Brown;* common in the colony extending northwards to New England, *C. Stuart;* and Clarence river, *Beckler.*

Victoria. Port Phillip, *R. Brown;* frequent throughout the colony, ascending to alpine situations, *F. Mueller.*

Tasmania. Abundant throughout the colony, *J. D. Hooker.*

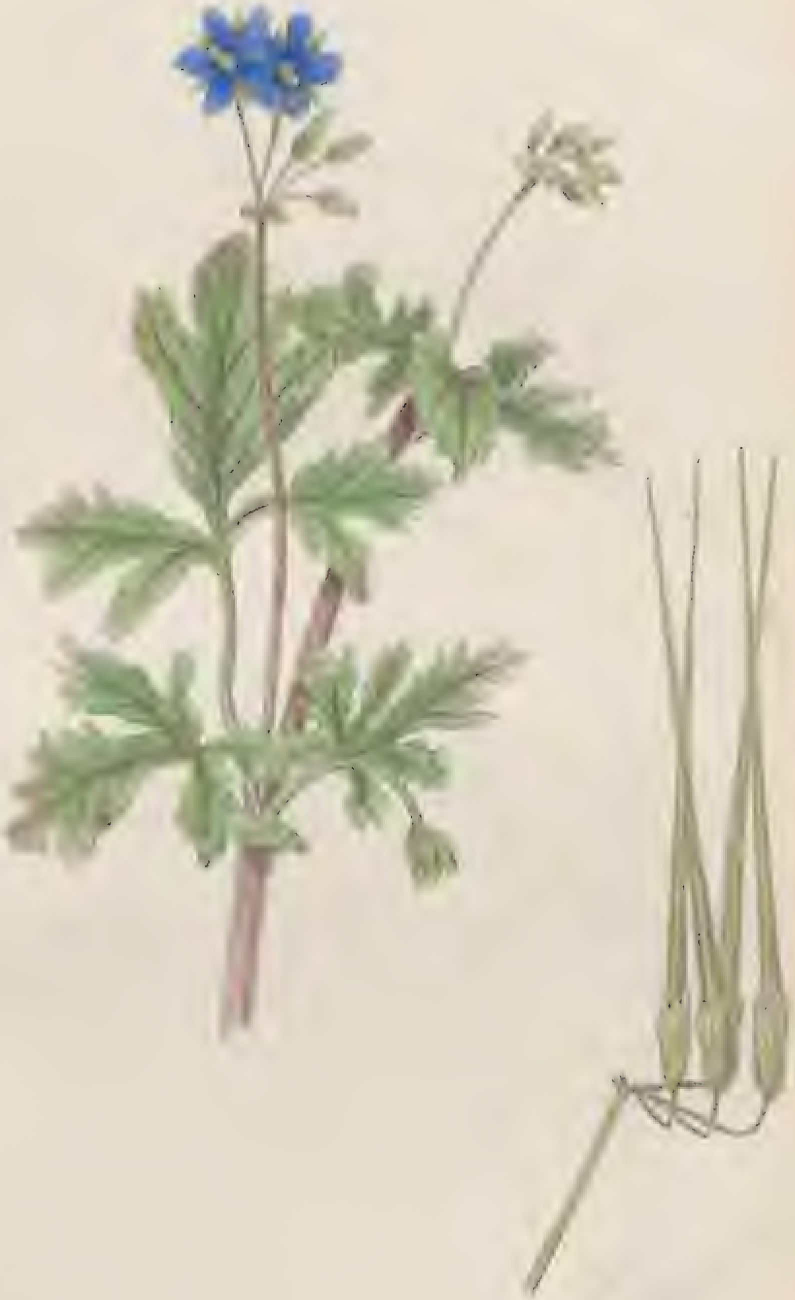
S. Australia. Common in the colony, *F. Mueller.*

W. Australia, *Drummond, Preiss, n.* 1900, 1907; *Oldfield* and others.

The original form of *G. dissectum*, as generally diffused over the temperate regions of the northern hemisphere, in the Old World, is an annual, with the petals very rarely exceeding the sepals, and the seeds very prominently reticulate. In the eastern United States of N. America, under the name of *G. carolinianum*, Linn., it is also annual or biennial, but has the petals often rather larger and the reticulations of the seeds are finer and less prominent. West of the Rocky Mountains the stock often appears to be perennial, and then it is undistinguishable from some Australian forms. The commonest Australian form is frequently sent from extratropical S. America, and extends all along the mountainous regions of that continent to Mexico and the Rocky Mountains, often apparently together with and passing into the northern annual variety. The Australian plant again, both in that country and in New Zealand, is very variable, and may be generally subdivided into two principal races, although I have, after repeated trials, found it impossible to distribute our numerous specimens quite satisfactorily into the two groups, viz.:—

a. pilosum. Root thick. Stems erect, ascending or procumbent, usually hirsute. Seeds strongly reticulate.

b. potentilloides. Root and stock less thickened. Stems more slender and prostrate, less hairy, and usually only slightly hoary with more appressed pubescence. Seeds more finely reticulate, or rarely almost smooth. To this variety belongs generally the *G. potentilloides* of authors, and *G. australe*, Nees. It appears to be rather the more common form in the East, whilst the var. *pilosum* is more frequent in the West. But both are found throughout extratropical Australia.



2. **G. sessiliflorum,** *Cav. Diss.* 198, *t.* 77, *f.* 2. Perennial, with the rootstock thick, descending into a taproot. Hairs of the peduncles and sepals long and silky, spreading or reflexed as in the var. *pilosum* of *G. dissectum.* Leaves mostly radical, on long petioles, divided, as in *G. dissectum,* into 5 or 7 lobed segments. Flowering-stems undeveloped or very short, rarely as long as the leaves, very hirsute. Peduncles short. Sepals much more prominently mucronate or awned than in *G. dissectum.* Petals small. Anthers all perfect. Capsule-lobes sprinkled with hairs, not wrinkled. Seeds perfectly smooth or minutely punctulate under a strong lens.—*G. brevicaule,* Hook. Journ. Bot. i. 253; Hook. f. Fl. Tasm. i. 57.

Victoria. In alpine situations, *F. Mueller.*

Tasmania. Common in alpine districts, at an elevation of 3000 to 4000 ft., *J. D. Hooker.* Also in New Zealand, in Fuegia and Chili. Considered by F. Mueller as an alpine form of *G. dissectum,* but, besides the habit, the smoothness of the seeds seems to be constant.

2. ERODIUM, L'Hér.

Flowers regular or nearly so. Sepals 5. Petals 5. Glands 5, alternating with the petals. Stamens 5 bearing anthers, opposite the sepals, and 5 staminodia, usually scale-like, alternating with them. Ovary 5-lobed, beaked, the beak terminating in the style, with 5 short stigmatic lobes. Ovules 2 in each cell. Capsule-lobes 1-seeded, separating from the placenta-bearing axis, enclosing the seed and curled upwards on a long elastic awn, which separates from the beak, and is usually twisted and bearded inside with long hairs. Radicle of the embryo turned back on the folded or convolute cotyledons.—Herbs or rarely undershrubs. Leaves unequally opposite or alternate, pinnately or rarely ternately lobed or divided. Peduncles axillary, bearing an umbel of several flowers, or rarely 1-flowered.

The species are numerous in Europe, North Africa, and temperate Asia, 2 or 3 are natives of S. Africa, and 2 or 3 more are now widely dispersed as weeds over many parts of the globe. Two of these are in Australia, one of them perhaps indigenous, but the common Australian species is endemic.

Leaves of 3 lobed or divided segments, the middle one the largest . . 1. *E. cygnorum.*
Leaves pinnate with deeply-lobed narrow segments . . . . . . 2. *E. cicutarium.*

Besides these, *E. moschatum,* Willd., a coarser plant than *E. cicutarium,* usually smelling of musk, the leaves pinnate as in that species, but with ovate, toothed, or scarcely lobed segments, has established itself as a weed in some parts of Victoria, S. Australia, and W. Australia.

1. **E. cygnorum,** *Nees, in Pl. Preiss.* i. 162. An annual or biennial, with the habit of the coarser forms of *E. cicutarium,* sometimes slightly pubescent, sometimes very hispid, with the hairs of the stem spreading or reflexed. Leaves deeply 3-lobed or divided to the base into 3 lobes or segments, usually obovate or cuneate, and more or less deeply toothed or again 3-lobed, the central lobe larger, broader, and more lobed than the lateral ones. Flowers blue, usually 2 to 5 in the umbel. Sepals pointed. Petals obovate, scarcely exceeding the calyx or shorter. Filaments broad at the base, with subulate points; staminodia scale-like, often toothed. Capsule-lobes glabrous, hairy or hispid; beak usually above 2 in. long.—F. Muell. Pl. Vict. i. 172.

Queensland. Peak Downs, *F. Mueller;* Maranoa river, *Mitchell.*

N. S. Wales. Nepean river, *R. Brown*; Lachlan and Darling rivers, *A. Cunningham*, *Dallachy*; on the Murrumbidgee, *M'Arthur.*

Victoria. Not rare in many parts of the colony, *F. Mueller.*

S. Australia. From Kangaroo Island and Spencer's Gulf to Lake Torrens, and further north, *F. Mueller* and others.

W. Australia. Swan River, *Drummond, Preiss, n.* 1902; and thence to Murchison river, *Oldfield.*

2. **E. cicutarium,** *L'Hér.*; *DC. Prod.* i. 646. Usually an annual, but often forming a dense tuft, with a thick taproot, which may last over a second year, always more or less covered with spreading hairs, which are sometimes viscid. Stems sometimes exceedingly short, but lengthening out to near 1 ft. Leaves mostly radical, pinnate, the segments distinct and deeply pinnatifid, with narrow, more or less cut lobes. Peduncles erect, bearing an umbel of from 2 or 3 to 10 or 12 small purple or pink flowers. Sepals pointed, about the length of the obovate entire petals. Filaments and staminodia lanceolate-subulate. Lobes of the capsule slightly hairy, the beak ½ to 1½ in. long.—Nees, in Pl. Preiss. i. 161; Reichb. Ic. Fl. Germ. v. t. 183.

N. S. Wales. Between the Lachlan and Darling rivers, *Dallachy*; Twofold Bay, *F. Mueller.*

Victoria. On the Murray, and now rather frequent in many parts of the colony, *F. Mueller.*

Tasmania. Along roadsides, evidently introduced, *J. D. Hooker.*

S. Australia. Towards Spencer's Gulf, *F. Mueller.*

W. Australia, *Drummond, Preiss, n.* 1899.

A very common weed in Europe and temperate Asia, and found in many other parts of the world, in many cases introduced, as in several or perhaps all of the Australian localities, but too widely spread now to be omitted from the Flora, even if it be not really indigenous.

3. PELARGONIUM, L'Hér.

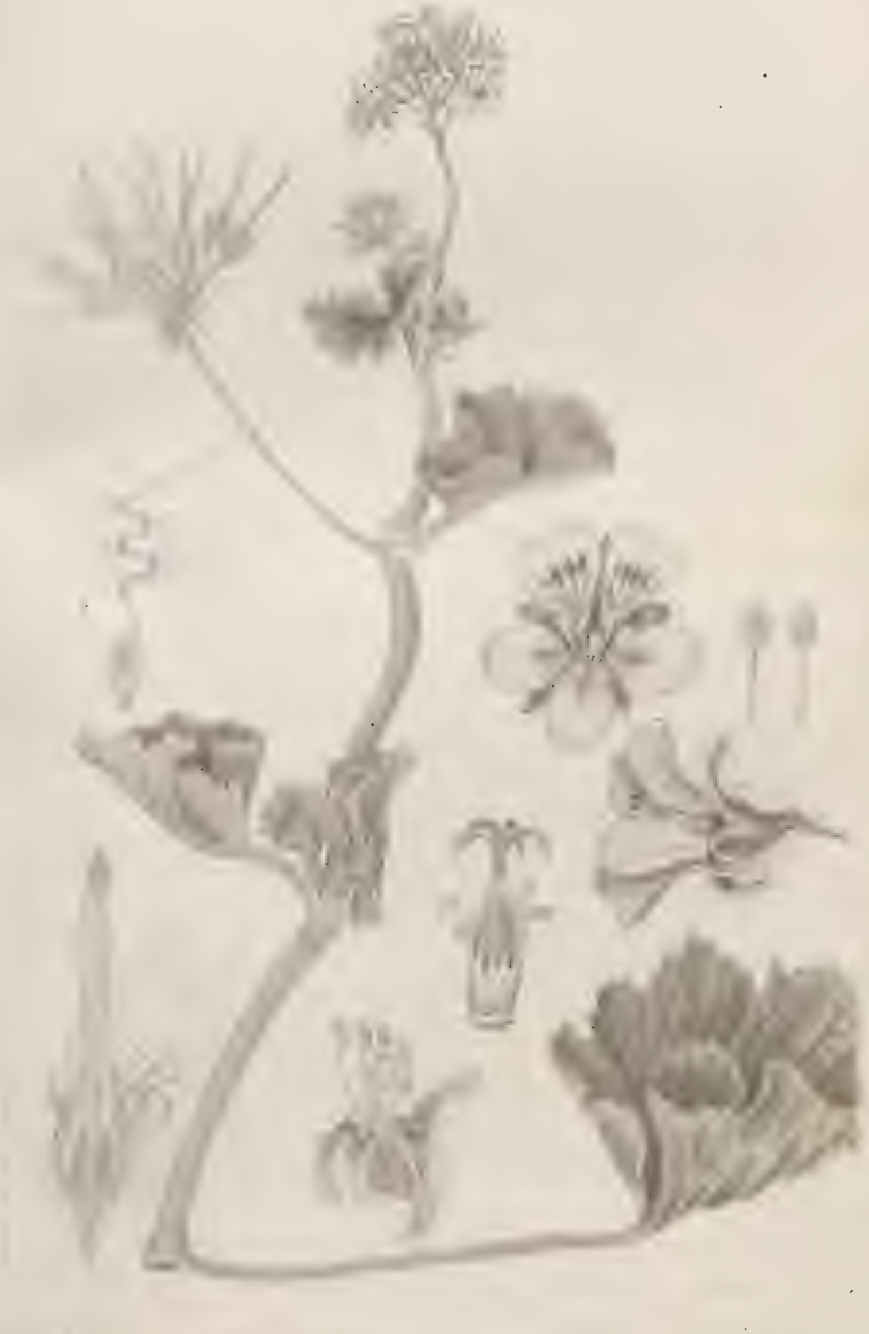
Flowers irregular. Sepals 5, shortly united at the base and produced into a tube or spur, adnate to the pedicel. Petals 5 or fewer, the 2 upper ones different from the others (usually larger), and inserted on the sides of or behind the spur. Disk without glands. Stamens usually 10, hypogynous, shortly united, 5 to 7 or rarely only 2 or 3 bearing anthers, the remainder without anthers or rudimentary. Ovary and fruit of *Erodium.* Cotyledons flat or folded.—Herbs, undershrubs, or shrubs. Leaves opposite or rarely alternate, entire, toothed, lobed, or variously divided. Peduncles usually axillary, bearing an umbel of several flowers.

A very large genus, but which, with the exception of 3 N. African or Levant species and the 2 Australian ones, is confined to S. Africa. One of the Australian species appears identical with a S. African one, and extends to New Zealand; the other, whether species or variety, is endemic.

Leafy stems usually elongated. Peduncles rarely twice as long as the leaves. Petals from a little longer to half as long again as the calyx . . . . 1. *P. australe.*

Stems short and erect. Peduncles much longer, erect. Petals fully twice as long as the calyx . . . . 2. *P. Rodneyanum.*

1. **P. australe,** *Willd.*; *DC. Prod.* i. 654. Herbaceous, often flowering the first year, but forming a perennial rootstock, either horizontal and



almost creeping, or short and thick. Leafy stems decumbent or erect, sometimes short, but usually attaining 1 ft. or more, generally pubescent or hirsute with spreading hairs. Leaves reniform-cordate, or very rarely broadly ovate-cordate, crenate, or very shortly lobed, very obtuse, rarely 2 in. diameter, and usually much smaller, softly pubescent or hirsute. Stipules broad. Peduncles usually longer than the leaves, but not so long as in *P. Rodneyanum*, and sometimes very short. Flowers small, in an umbel, sometimes very dense, almost reduced to a head, sometimes loose with pedicels of ½ in. or more. Sepals acute, 2 to 3 lines long, usually very hairy, the decurrent tube rarely so long, and sometimes very short. Petals from a little longer than the sepals to about half as long again. Capsule-lobes pubescent, the beak from ½ to ¾ in. long, the awns of the lobes bearded inside as in *Erodium*. Seeds smooth.—Sweet, Geran. t. 68; Hook. f. Fl. Tasm. i. 57; F. Muell. Pl. Vict. i. 170; *P. glomeratum*, Jacq.; DC. Prod. i. 659; *P. inodorum*, Willd.; DC. l. c.; Sweet, Geran. t. 56; *P. littorale*, Hueg. Bot. Arch. t. 5; *P. crinitum*, Nees, in Pl. Preiss. i. 163; *P. stenanthum*, Turcz. in Bull. Mosc. 1858, i. 149; *P. Drummondi*, Turcz. l. c. 421 (a robust form with large flowers).

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 252; northward to Clarence river, *Beckler*, and New England, and inland to the Blue Mountains and Lachlan river, *A. Cunningham* and others.

Victoria. Frequent on sandy shores, desert land, river banks, mountains, etc., *F. Mueller*.

Tasmania, *R. Brown*. Abundant in many parts of the colony, especially near the sea, *J. D. Hooker*.

S. Australia. Chiefly near the sea, *F. Mueller* and others.

W. Australia. King George's Sound, *R. Brown;* and thence to Swan River, *Drummond, 1st Coll., Coll.* 5, *n.* 191, 192, 193, etc.; *Preiss, n.* 1905, 1906; *Oldfield*, and others.

Var. *erodioides;* small and slender, pubescent, the leaves not above ½ in. diameter, and flowers small, the sepals varying from 1 to 2 lines. *P. erodioides*, Hook. Journ. Bot. i. 252; *P. acugnaticum*, Thou.; Hook. f. Fl. Tasm. i. 58.—Tasmania, and occasionally in Victoria, and especially in N. S. Wales, where is also a more robust form, but with flowers at least as small. This is the *P. clandestinum*, L'Hér.; Hook. f. Fl. N. Zeal. i. 41, and is the most common form in New Zealand. *P. acugnaticum*, Thou., from Tristan d'Acunha, is also a form of the same species scarcely to be distinguished from the var. *erodioides*, and all these collectively cannot be separated from the S. African var. *anceps* of *P. grossularioides*, Ait., or *P. anceps*, Ait. But although the Australian *P. australe* and S. African *P. grossularioides* thus coincide in this particular form, the more common varieties are in each case endemic, the ordinary *P. australe* described above never occurring in S. Africa, where the most common form is one with deeply-cut leaves, which is never to be met with in Australia. See Harv. and Sond. Fl. Cap. i. 289.

2. **P. Rodneyanum,** *Lindl. in Mitch. Three Exped.* ii. 114. A perennial, forming a thick rootstock and a very short erect stem, hirsute with spreading hairs. Leaves chiefly radical, petiolate, from broadly orbicular-cordate to ovate, obtuse, 1 to 2 in. long, crenulate and sometimes shortly lobed, glabrous or minutely hoary-tomentose. Peduncles erect, 4 to 8 in. long, bearing an umbel of 4 to 8 showy reddish-purple flowers. Sepals about 3 lines long, rather obtuse; the adnate calyx-tube usually longer, but sometimes rather shorter than the sepals. Petals fully twice as long as the calyx, the two upper ones larger than the others. Fruit not seen.—F. Muell. Pl. Vict. i. 171, t. suppl. 11.

Victoria. Near the Murray river, *Mitchell;* Forest Creek and towards Mount Alexander, *F. Mueller;* in the Grampians, *Wilhelmi.*

S. Australia. Lynedoch Valley, *Behr;* near Skipton, *Whan.*

W. Australia. In the interior from Swan River, *Drummond, Roe.* In these specimens the leaves are more decidedly cordate, almost reniform.

The species much resembles in habit and flowers, and in the shape of the foliage *P. reniforme,* Curt., from South Africa, but wants the dense whitish velvety tomentum of the under side of the leaves of that species. F. Mueller thinks it a variety only of *P. australe,* but of that we have not as yet sufficient evidence to justify the union.

4. OXALIS, Linn.

Flowers regular. Sepals 5. Petals 5. Disk without glands. Stamens 10, free or united at the base, all bearing anthers. Ovary 5-lobed, 5-celled, without any beak or with a very short one; styles 5, with terminal stigmas, capitate or lobed; ovules 1, 2, or several in each cell. Capsule opening loculicidally, the valves persistent on the axis. Seeds with an outer fleshy coating, opening elastically, with the appearance of an arillus; testa crustaceous; albumen fleshy; embryo straight.—Herbs. Leaves alternate or radical, compound; leaflets 3, digitate, or, in species not Australian, 3 or more and pinnate. Stipules scale-like or none. Peduncles axillary or radical, 1-flowered or bearing an umbel of several flowers.

A large genus, especially abundant in South America and extratropical South Africa, with a very few species widely dispersed over the temperate or tropical regions of the globe. Of the two Australian species, one is common to New Zealand and Antarctic America, and perhaps not different from a common northern one, the other is a widely-spread weed in various parts of the world.

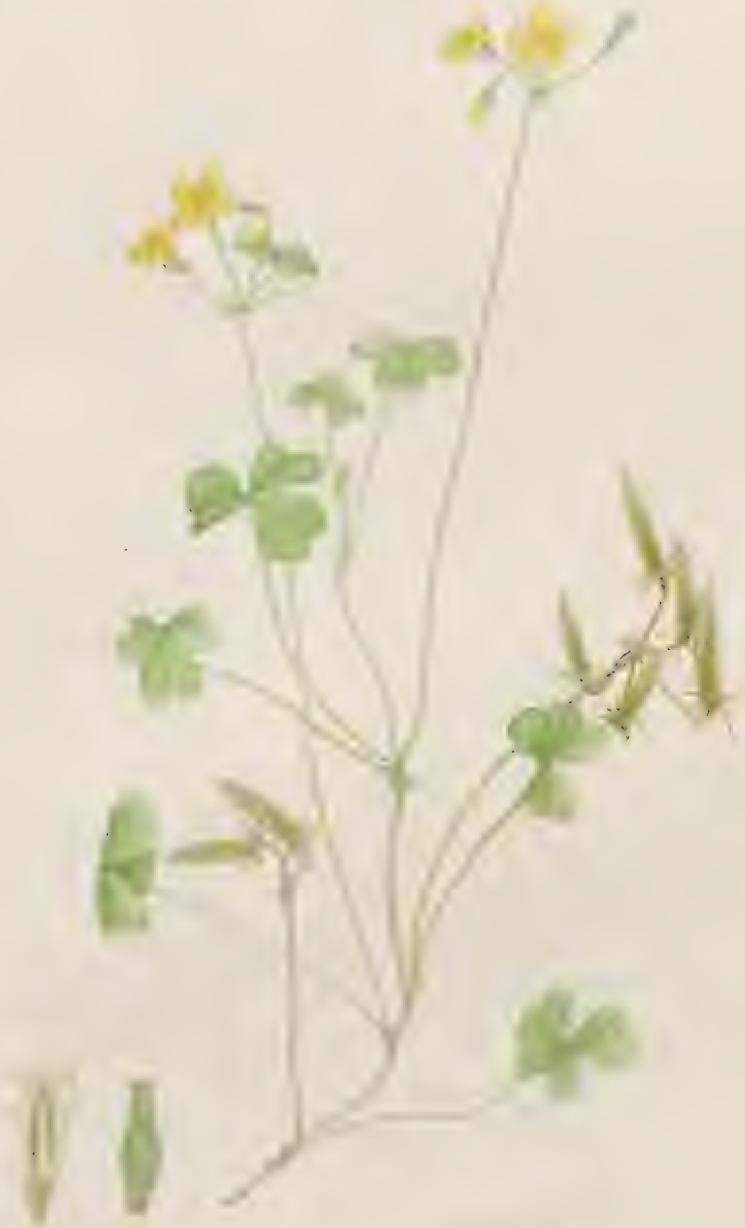
Flowers white. Peduncles radical, 1-flowered . . . . 1. *O. magellanica.*
Flowers small, yellow. Stem elongated. Peduncles axillary, 1- or
more-flowered . . . . 2. *O. corniculata.*

1. **O. magellanica,** *Forst.; DC. Prod.* i. 700. Rootstock shortly creeping, slender, but often knotted with thickened scale-like persistent stipules. Leaves radical, sprinkled with a few hairs; leaflets 3, obcordate, of a delicate green, on a long common petiole. Peduncles radical, long and slender, bearing a single rather large white flower, with a pair of narrow bracts above the middle. Sepals small, ovate, obtuse, thin. Petals obovate, 4 to 6 lines long. Capsule ovoid, with 1 or 2 shining black seeds in each cell. —Hook. f. Fl. Tasm. i. 59; Fl. N. Zeal. i. 42, t. 13; F. Muell. Pl. Vict. i. 176; *O. lactea,* Hook. Comp. Bot. Mag. i. 276, and Journ. Bot. ii. 416; *O. cataractæ,* A. Cunn.; Hook. Ic. Pl. t. 418.

Victoria. Humid subalpine forests and alpine streams in the western parts of Gipps' Land, at an elevation of 2500 to 5000 ft., *F. Mueller.*

Tasmania. Mountain woods and streams in various parts of the colony at an elevation of 1500 to 3000 ft., *J. D. Hooker.*

The species is also in New Zealand and in Fuegia and S. Chili. Some of the Victorian specimens can also scarcely be distinguished from the *O. Acetosella,* Linn., a widely-spread species in the temperate or mountainous regions of the northern hemisphere. The stipules are rather larger, the bracts longer and narrower, and the leaflets more deeply notched, the minute glandular appendage in the notch being often more or less visible in the northern plant. The Tasmanian form, like the New Zealand and S. American ones, is smaller and more stunted.



2. **O. corniculata,** *Linn.; DC. Prod.* i. 692. A decumbent, prostrate or ascending, much-branched, delicate perennial or sometimes annual, more or less pubescent, of a pale green, from a few inches to a foot long. Stipular scales small, adnate to the petiole. Leaves alternate; leaflets 3, broadly obcordate, usually 3 or 4 lines long, but sometimes half that size. Peduncles axillary, about the length of the petioles, bearing an umbel of several small yellow flowers, rarely reduced to 1 or 2, on reflexed pedicels. Capsule column-like, often above ½ in. long, with several seeds in each cell, rarely short and few-seeded.—Reichb. Ic. Fl. Germ. v. t. 199; Wight, Ic. t. 18; Hook f. Fl. Tasm. i. 59; F. Muell. Pl. Vict. i. 177; *O. microphylla*, Poir.; DC. Prod. i. 692; *O. perennans*, Haw.; DC. l. c. 691 (from the character given); *O. Preissiana* and *O. cognata*, Steud. in Pl. Preiss. i. 160.

Queensland. Islands of the coast as well as on the mainland, Keppel Bay, *R. Brown*; Percy Island, *A. Cunningham* and others; and in the interior as far north as the Burdekin, *F. Mueller, Mitchell*, etc.

N. S. Wales. Port Jackson, and northward to Clarence and Hastings rivers, *Beckler*; southward to Twofold Bay, *F. Mueller*; and in the interior.

Victoria. Common throughout the colony, except the alpine tracts, *F. Mueller.*

Tasmania. Common in pastures, waste places, etc., throughout the island, *J. D. Hooker.*

S. Australia. Extending over the colony inland to Lofty Range, *F. Mueller* and others.

W. Australia. From the S. coast to Swan River, *Drummond, Preiss, n.* 1915, 1916, and others; and to Murchison river, *Oldfield.*

ORDER XXVIII. RUTACEÆ.

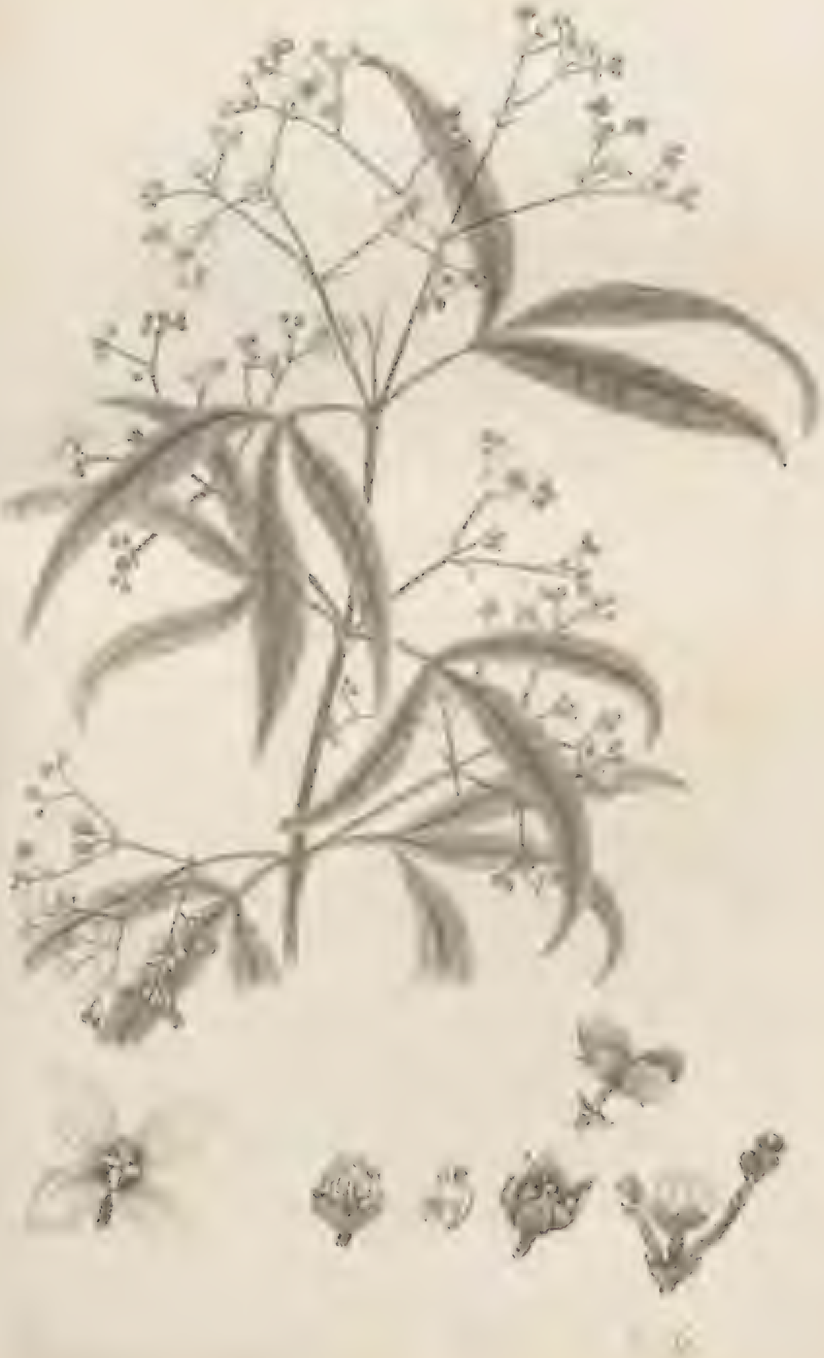
Flowers regular and hermaphrodite, or very rarely unisexual. Calyx usually small, 4- or 5-lobed, or divided into as many distinct imbricate sepals, rarely large, or with fewer or more numerous or valvate lobes. Petals of the same number as sepals, free or rarely cohering, hypogynous or slightly perigynous, imbricate or valvate in the bud. Stamens usually free, either equal in number to the petals and alternate with them, or double the number, or rarely more numerous, when twice as many as petals the sepaline ones (those opposite the sepals) usually longer than the others. Anthers usually versatile, with 2 parallel cells opening longitudinally, the connective occasionally tipped by a gland or projecting appendage. Torus usually more or less thickened into an entire crenate or lobed disk, within the stamens, under or round the ovary. Gynœcium of 4 or 5, rarely more or fewer carpels, more or less united into a single lobed or entire ovary, or rarely quite distinct, with one cell to each carpel. Styles as many as carpels, either free at the base but united upwards, or united from the base; stigma terminal, entire or lobed. Ovules usually 2 in each cell, superposed or rarely collateral or solitary, or more than 2; the micropyle superior. Fruit separating into 2-valved or rarely indehiscent cocci, or the carpels united in an indehiscent berry or drupe, or rarely in a loculicidally dehiscent capsule, the endocarp frequently separating from the pericarp. Seeds usually solitary in each cell; testa crustaceous and often shining, or rarely coriaceous or membranaceous; albumen fleshy or none. Embryo straight or curved, large in proportion to the seed; cotyledons flat or rarely folded; radicle superior.—Trees or shrubs, very rarely herbs, marked with glandular pellucid dots on the leaves and other thin herbaceous parts. Indumentum usually stellate, if any. Leaves opposite or alternate, simple or compound, entire or rarely toothed or lobed. Stipules none. Flowers axillary or terminal, solitary, clustered, cymose, or paniculate, very rarely racemose and seldom if ever spicate.

A large Order, ranging over the hotter and temperate regions of the whole world, but chiefly abundant within the tropics, in South Africa and in Australia. Among the Australian genera, the large tribe of *Boronieæ* is entirely endemic, with the exception of one New Zealand and one New Caledonian species. The monotypic genera, *Bosistoa*, *Medicosma*, and *Pentaceras*, and the small genus *Geijera*, are also endemic. *Melicope* extends to the Pacific islands, and the remaining genera range over tropical Asia, three of them extending into Africa. *Zanthoxylum* alone, a wide-spread tropical genus, is common to America and Australia, and even here the Australian species belong to the exclusively Australasian section *Blackburnia*.

Difficult as it is to distinguish *Rutaceæ* by well-marked floral or carpological characters from *Geraniaceæ*, *Zygophylleæ*, or *Simarubeæ*, they are so readily known by their dotted exstipulate leaves, that the ambiguous genera are remarkably few. They have usually been distributed into 3 or 4 Orders, *Rutaceæ* (including or not *Diosmeæ*), *Zanthoxyleæ*, and *Aurantieæ*, upon characters which break down upon a close scrutiny; the *Toddalieæ* being much nearer to the *Aurantieæ* than to the *Zanthoxyleæ* proper, which again have only vague differences to distinguish them from *Boronieæ*. We therefore, in our 'Genera Plantarum,' proposed the union of the whole into 1 Order, divided into 2 series, according as the ovary is lobed or entire, and subdivided into 7 tribes, of which 4 only are Australian.

TRIBE I. **Boronieæ.**—*Shrubs, very rarely arborescent. Leaves simple, 3-foliolate or rarely pinnate, with opposite small leaflets. Ovary lobed. Fruit separating into distinct, 2-valved cocci. Endocarp separating elastically. Seeds albuminous. Embryo usually terete.*

Leaves opposite (except in one *Zieria*) simple or compound.
Petals 4, united or connivent in a cylindrical or campanulate corolla. Leaves petiolate, simple . . . . 12. CORREA.
Petals 4, free, spreading.
Stamens 4, inserted on 4 prominent glands or lobes of the disk 1. ZIERIA.
Stamens 8. Disk without prominent glands (excepting *B. tetrandra*) . . . . 2. BORONIA.
Petals 5, rarely more, free, spreading . . . . 3. ACRADENIA.
Leaves alternate, simple.
Flowers in dense pedunculate reflexed heads. Stamens much exserted.
Bracts subulate. Sepals 5. Petals narrow. Leaves lobed . 14. CHORILÆNA.
Bracts ovate or lanceolate, numerous and imbricate. Sepals 0.
Petals very narrow. Leaves entire . . . . 15. DIPLOLÆNA.
(See also *Phebalium Ralstoni.*)
Flowers distinct or in sessile, erect heads.
Petals united or connivent in a tubular corolla . . . . . . 13. NEMATOLEPIS.
Petals free. Stamens twice as many, monadelphous.
Stamens all perfect . . . . 9. PHILOTHECA.
Stamens 5 perfect, 5 without anthers . . . . 10. DRUMMONDITA.
Petals free. Stamens twice as many, free.
Calyx inconspicuous or none. Petals induplicate-valvate, tomentose outside . . . . 11. ASTEROLASIA.
Calyx distinct but shorter than the petals.
Petals broad, much imbricate, not scurfy, without inflexed tips. Filaments hairy.
Anthers minutely or not at all apiculate . . . . . 5. ERIOSTEMON.
Anthers tipped with long, horn-like, hairy appendages . 4. CROWEA.



Petals valvate or slightly imbricate, with inflexed valvate tips, glabrous or scaly.
Ovary of 5, rarely fewer carpels, the styles attached below the middle . . . . 6. PHEBALIUM.
Ovary of 2 carpels, the style attached above the middle. Flowers small, in sessile, terminal heads . . . . 7. MICROCYBE.
Calyx of coloured petal-like sepals longer than the petals . 8. GELEZNOWIA.
Petals free. Stamens of the same number, free . . . . . 21. GEIJERA.

TRIBE II. **Zanthoxyleæ.**—*Trees or shrubs. Leaves pinnate or 3-foliolate with opposite leaflets, or 1-foliolate (truly simple in* Geijera), *the leaflets usually large. Ovary lobed. Fruit separating into distinct 2-valved cocci. Endocarp persistent, or separating elastically. Seeds with or without albumen. Cotyledons usually flattened and broader than the radicle.*

Stamens twice as many as petals.
Leaves all or mostly opposite. Cocci dehiscent.
Leaves pinnate. Petals valvate or slightly imbricate. Seeds without albumen . . . . 16. BOSISTOA.
Leaves 3-foliolate. Petals valvate or slightly imbricate, with inflexed lips . . . . 17. MELICOPE.
Leaves 1-foliolate. Petals large, broadly imbricate, not inflexed 19. MEDICOSMA.
Leaves alternate, pinnate. Petals valvate. Cocci winged, indehiscent . . . . 22. PENTACEROS.
Stamens the same number as petals. Cocci dehiscent.
Leaves all or mostly opposite, usually 3-foliolate . . . . . . 18. EVODIA.
Leaves alternate, simple . . . . 21. GEIJERA.
Leaves alternate, pinnate . . . . 20. ZANTHOXYLUM.
(See also *Flindersia* among *Meliaceæ*.)

TRIBE III. **Toddalieæ.**—*Trees or shrubs, with the habit of* Zanthoxyleæ. *Ovary not lobed. Fruit several-celled, indehiscent, or rarely loculicidally dehiscent. Seeds albuminous* (in the Australian genus).

Leaves 1-foliolate. Stamens twice as many as petals . . . . . 23. ACRONYCHIA.

TRIBE IV. **Aurantieæ.**—*Trees or shrubs. Leaves pinnate, with usually alternate leaflets, or 1-foliolate or simple. Stamens twice as many as petals or more. Ovary not lobed. Fruit indehiscent. Seeds without albumen.*

Leaves all or mostly pinnate. No thorns.
Flowers in terminal, flat, corymbose panicles. Filaments subulate.
Petals valvate or nearly so. Cotyledons much folded. Flowers small . . . . 25. MICROMELUM.
Petals imbricate, erect. Cotyledons flat. Flowers large . . 26. MURRAYA.
Flowers in oblong, pyramidal, or loose axillary or terminal panicles. Filaments dilated at the base or middle.
Ovules solitary. Leaflets few . . . . 24. GLYCOSMIS.
Ovules 2 in each cell. Leaflets numerous . . . . 27. CLAUSENA.
Leaves all simple or 1-foliolate, coriaceous. Thorns axillary.
Ovary 5- or fewer celled, with 1 or 2 ovules in each cell . . . 28. ATALANTIA.
Ovary 6- or more celled, with 4 or more ovules in each cell . . 29. CITRUS.

TRIBE I. BORONIEÆ.—Shrubs, very rarely arborescent. Leaves simple, 3-foliolate or rarely pinnate, with opposite small leaflets. Ovary lobed. Fruit separating into distinct 2-valved cocci. Endocarp separating elastically. Seeds albuminous. Embryo usually terete.—The tribe differs from the S. African *Diosmeæ* chiefly in the presence of albumen.

1. ZIERIA, Sm.

Calyx 4-cleft. Petals 4, imbricate or almost valvate in the bud, spreading.

Disk with 4 distinct gland-like lobes, alternating with the petals. Stamens 4, inserted on the outside of the glands of the disk. Carpels 4, distinct or nearly so; styles nearly terminal, short and united at least at the top; stigma capitate, 4-furrowed or shortly 4-lobed. Ovules 2 in each carpel, superposed. Cocci 4, 2-valved, the endocarp cartilaginous and separating elastically. Seeds solitary, or rarely 2 in each coccus, oblong; testa crustaceous. Shrubs or rarely small trees, glabrous hirsute or tomentose. Leaves usually opposite, with 3 leaflets, rarely alternate or simple. Flowers white, usually small, axillary, in small trichotomous cymes or rarely solitary.

The species are all endemic in Australia, and F. Mueller considers them as forming a section only of *Boronia*; but the characters and habit appear to me sufficiently distinct to justify the maintenance of so old-established and generally adopted a genus.

Anthers distinctly apiculate. Plant glabrous or slightly pubescent.
  Leaflets with revolute margins. Cymes pedunculate.
    Branchlets angular, glabrous. Leaflets ½ to 1 in. on a distinct common petiole . . . . . . 1. *Z. lævigata.*
    Branchlets terete, pubescent. Leaflets under ½ in., sessile, appearing verticillate . . . . . . 2. *Z. aspalathoides.*
Anthers minutely apiculate, Plant pubescent or hirsute, rarely tomentose. Flowers 1 to 3, small. Calyx-segments very narrow, nearly as long as the petals . . . . . . 3. *Z. pilosa.*
Anthers not apiculate. Calyx-lobes short.
  Flowers 1 to 3, on short axillary pedicels. Leaves densely pubescent or tomentose.
    Leaflets 3, small, obovate or obcordate. Flowers very small . 4. *Z. obcordata.*
    Leaves simple, ovate or oblong . . . . . . 5. *Z. veronicea.*
  Flowers in pedunculate cymes or heads, with leafy bracts. Leaves densely tomentose or villous.
    Upper leaves simple. Cymes contracted into dense heads, with imbricate bracts . . . . . . 6. *Z. involucrata.*
    Leaves all 3-foliolate. Cymes not capitate . . . . . . 7. *Z. cytisoides.*
  Flowers in loose pedunculate cymes, with small bracts.
    Densely tomentose or velvety. Leaflets flat, lanceolate. Petals almost valvate . . . . . . 8. *Z. furfuracea.*
    Glabrous or slightly pubescent.
      Leaflets flat, lanceolate. Petals distinctly imbricate . . . 9. *Z. Smithii.*
      Leaflets narrow-linear. Flowers small, the petals almost valvate . . . . . . 10. *Z. granulata.*

1. **Z. lævigata,** *Sm.*; *DC. Prod.* i. 723. A glabrous, erect shrub, the branchlets angular. Leaflets 3, on a common petiole of 1 to 3 lines, linear, pointed, ½ to 1 in. long, the margins closely revolute. Cymes few-flowered, mostly about as long as the leaves. Calyx-lobes short and broad. Petals fully 3 times as long as the calyx, broad, imbricate, slightly tomentose outside. Connective of the anthers distinct, produced beyond the cells into a short point or appendage. Style very short. Cocci and seeds of *Z. Smithii.*—Deless. Ic. Sel. iii. t. 49; Paxt. Mag. Bot. ix. 77, with a fig.; *Boronia lævigata*, F. Muell. Fragm. i. 101; *Z. revoluta*, A. Cunn. in Field, N. S. Wales, 330.

Queensland. Sandstone rocks near Mount Pluto, *Mitchell.*

N. S. Wales. Port Jackson, *R. Brown* and others; Blue Mountains, *A. Cunningham*; Mount Lindsay, *Fraser.*

Var. *laxiflora.* Leaflets longer (1 to 1½ in.), on a longer common petiole. Flowers much smaller, in a looser cyme. Petals not twice as long as the calyx.—Stradbrooke Island, *Fraser;* Moreton Island, *F. Mueller.*

2. **Z. aspalathoides,** *A. Cunn. Herb.* A heath-like shrub, the branches terete and pubescent, but usually with a decurrent glabrous line. Leaflets 3, sessile or with the common petiole so exceedingly short that they appear verticillate, lanceolate or linear, rarely above 3 lines long, or when very luxuriant 4 or 5 lines, the margins revolute, glabrous or slightly pubescent. Cymes usually 3-flowered, rather longer than the leaves. Calyx-lobes broad, obtuse or acute. Petals about 2 or 3 times as long. Anthers tipped with a small obtuse appendage.—*Boronia lævigata,* F. Muell. Pl. Vict. i. 111 (in part).

N. S. Wales. Wellington Valley, Blue Mountains, and W. branches of Hunter's River, *A. Cunningham;* Peele's ranges, *Fraser.*

Victoria. Grampians, *A. Cunningham;* barren ridges near Goulburn river, *F. Mueller.*

3. **Z. pilosa,** *Rudge, in Trans. Linn. Soc.* x. 293, *t.* 17. A shrub or undershrub, the branches terete and densely pubescent or hirsute. Leaflets 3, with a short common petiole, linear, oblong or lanceolate, obtuse, ½ to ¾ in. or rarely 1 in. long, the margins recurved or revolute, slightly pubescent or glabrous above, more or less hirsute or tomentose underneath. Flowers small, solitary and nearly sessile or 2 or 3 together on short pedicels. Calyx hirsute, with linear-subulate or narrow-lanceolate lobes, nearly as long as the petals and always much narrower than in any other species. Anthers minutely apiculate. Cocci hirsute, broader than in most species.—DC. Prod. i. 723; *Z. pauciflora,* Sm. in Rees, Cycl. xxxix.; DC. l. c.; *Z. hirsuta,* DC. l. c.; Deless. Ic. Sel. iii. t. 50; *Boronia hirsuta,* F. Muell. Fragm. i. 101.

N. S. Wales. Port Jackson and Botany Bay, *Banks, R. Brown, Sieber, n.* 283 (partly mixed with *Boronia polygalifolia,* var. *triphylla*), and many others.

Var. *parviflora.* Less pubescent; leaves smaller; flowers and fruit much smaller. Both in *Banks'* and in *R. Brown's* collections.

Var. (?) *canescens.* More tomentose-hirsute; leaves narrow, very tomentose underneath, the margins scarcely recurved; inflorescence looser, the peduncles rather lengthened and 3-flowered, but with the calyx of *Z. pilosa.*—*Z. canescens,* R. Br. Herb.—Hills in the interior, *Caley.*

Z. microphylla, Bonpl. Jard. Malm. 64, DC. Prod. i. 723, only known by an exceedingly short diagnosis, is probably this species. I did not find it in the Paris herbarium. *Z. trifoliata,* Bonpl., mentioned in gardening works, is probably this or one other of the common species met with in gardens.

4. **Z. obcordata,** *A. Cunn. in Field, N. S. Wales,* 330. A shrub of low growth, with elongated diffuse branches, terete and softly hirsute. Leaflets 3, with a very short common petiole, obovate or obcordate, 2 to 4 lines or rarely ½ in. long, softly pubescent or tomentose above, more hirsute or velvety and whitish underneath, the margins recurved or revolute. Flowers 1 to 3 in the axils, very small, on short slender pedicels, the petals not above 1 line and the calyx about half as long with broad and obtuse segments. Anthers not apiculate. Cocci small, glabrous.—*Boronia minutiflora,* F. Muell. Fragm. i. 100.

Queensland. Glasshouse Mountains, *F. Mueller.*

N. S. Wales. Macquarie river, *A. Cunningham.*

5. **Z. veronicea,** *F. Muell. Trans. Phil. Soc. Vict.* i. 11. A low shrub, clothed all over with a soft close or velvety tomentum. Leaves all simple,

opposite or alternate, sessile or nearly so, ovate or oblong, obtuse, mostly 3 to 4 lines and rarely ½ in. long, the margins revolute. Flowers solitary or 2 or 3 together, on short pedicels. Bracts small but leafy. Calyx tomentose. Petals about twice as long, tomentose outside, much imbricate. Filaments hairy. Anthers obtuse or obscurely apiculate. Ovary and style stellate-pubescent. Cocci tomentose.—*Boronia veronicea*, F. Muell. Pl. Vict. i. 228.

Victoria. Sandy Mallee scrub along the lower Wimmera, *Dallachy*.
S. Australia. Encounter Bay and Kangaroo Island, *F. Mueller* and others.

6. **Z. involucrata,** *R. Br. Herb.* The whole plant densely and softly tomentose-hirsute. Lower leaves simple, oblong, obtuse, 1 to 1½ in. long, flat; upper ones 3-foliolate with a short common petiole; leaflets similar to the simple leaves or smaller. Flowers several together, sessile, in dense heads on axillary peduncles. Bracts ovate, leafy, softly villous, nearly as long as the flowers and imbricate with them. Sepals ovate-lanceolate, acute, more than half as long as the petals. Anthers not apiculate.

N. S. Wales. Valleys of the Blue Mountains, *Backhouse.*

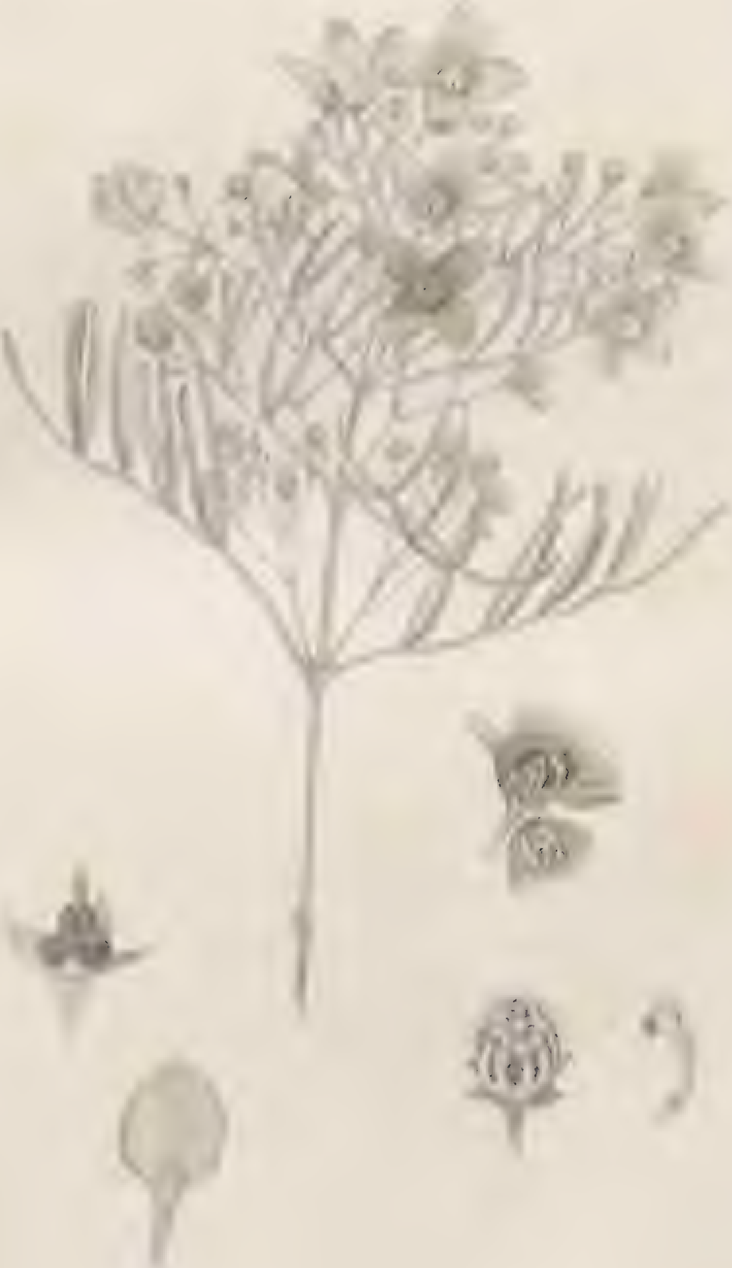
7. **Z. cytisoides,** *Sm.; DC. Prod.* i. 723. A much-branched shrub, hoary all over with a soft close or more or less velvety tomentum. Leaflets 3, with a common petiole of 1 to 3 lines, obovate-oblong, about ½ or rarely ¾ in. long, obtuse or minutely pointed, the margins revolute, narrowed at the base. Cymes dense but few-flowered, rarely much exceeding the leaves. Bracts leafy, as long as the pedicels or often nearly as long as the flowers. Calyx rather short, with broad acute segments. Petals rarely twice as long, much imbricate in the bud. Anthers not apiculate.

N. S. Wales. In the mountains, *Caley;* high granitic ranges near Bathurst, *Fraser, A. Cunningham;* Twofold Bay, *Huegel, F. Mueller;* Castle Creek, *Leichhardt.*

8. **Z. furfuracea,** *R. Br. Herb.* A tall shrub, so nearly resembling some forms of *Z. Smithii* in the shape and size of the leaves and in inflorescence that F. Mueller suggests it may be only a remarkable variety. Whole plant densely clothed with a soft velvety stellate tomentum, the tubercular glands also tomentose and often projecting on the branches and under side of the leaves, and the dots quite opaque or rarely pellucid. Leaflets lanceolate, flat. Flowers numerous in the cymes, much smaller than in *Z. Smithii*, and the petals less imbricate or almost valvate. Cocci hairy.

N. S. Wales. N.W. interior, *Fraser;* Hastings river, *Beckler.*

9. **Z. Smithii,** *Andr. Bot. Rep. t.* 606 (1810). A tall shrub or small tree, glabrous or slightly pubescent with a very minute usually stellate down, the branches terete or compressed, occasionally covered with glandular tubercles. Leaflets 3, with a distinct common petiole, lanceolate or the larger ones oblong, elliptical, acute or rarely obtuse, 1 to 2 in. long in the original form, flat or the margins slightly recurved. Flowers usually about 3 lines diameter, in axillary 2–3-chotomous cymes, shorter than the leaves. Calyx-lobes broad and short. Petals fully 3 times as long as the calyx, tomentose outside. Anthers obtuse, not apiculate. Cocci about 2 lines long, glabrous, usually glandular-tuberculate. Seeds shining, finely reticulate-striate.—Bot. Mag. t. 1395; Bonpl. Jard. Malm. 62, t. 24; *Z. lanceolata*, R. Br.; DC.



Prod. i. 723 ; Hook. f. Fl. Tasm. i. 65 ; *Boronia arborescens*, F. Muell. Fragm. i. 100, and Pl. Vict. i. 111.

Queensland. Brisbane river, *A. Cunningham* ; Stradbrooke Island, *Fraser*.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 280, and others; Blue Mountains, *Fraser* and others; northward to Hastings river, *A. Cunningham* and others; and Mount Lindsay, *W. Hill* ; southward to Twofold Bay, *F. Mueller*.

Victoria. From the Grampians and Cape Otway ranges eastward, along humid forest valleys, ascending to high mountain ravines, *F. Mueller*.

Tasmania. Port Dalrymple and King's Island, *R. Brown* ; common in rich soil throughout the island, *J. D. Hooker*.

Var. *parvifolia*. Leaflets rarely exceeding 1 in.; cymes often as long.—Sandy Bay and Cape Hervey, *R. Brown* ; New England, *Stuart*.

Var. *macrophylla*. More arborescent ; leaflets often 3 in. long; flowers larger than in the ordinary form ; seeds broader and less reticulate.—*Z. arborescens*, Sims ; Hook. Journ. Bot. i. 256 ; *Z. macrophylla*, Bonpl. ; Deless. Ic. Sel. iii. t. 48 ; Bot. Mag. t. 4451. To this variety belong the Tasmanian and many of the Victorian specimens.

The stamens in this and other *Zierias* are figured in Delessert's 'Icones,' by some mistake, as attached inside instead of outside the glands or lobes of the disk. The name of *Z. lanceolata* was adopted by Smith (in Rees' Cycl. xxxix.), on the consideration that the synonym quoted in the Bot. Mag. was a sufficient publication; Andrews' name had, however, been published a year previous to the plate in Bot. Mag.

10. **Z. granulata,** *C. Moore, in Herb. Hook.* A tall shrub or small tree, glabrous or very minutely pubescent, and densely covered with glandular tubercles as in some varieties of *Z. Smithii*, with which F. Mueller proposes to unite it. It differs chiefly in the narrow-linear leaflets, 1 to 2 in. long, the margins revolute and whitish underneath, and in the very small flowers, with the petals almost strictly valvate. Cocci glabrous.—*Boronia granulata*, F. Muell. Fragm. i. 101.

N. S. Wales. Near Goulburn, *C. Moore*, woods of Paris Exhibition, n. 204 ; Kiama, *Harvey*.

2. BORONIA, Sm.

Calyx 4-cleft. Petals 4, either much imbricate or valvate in the bud, spreading. Disk thick, entire or (in one species only) with 4 gland-like lobes. Stamens 8, inserted outside the disk ; anthers either all similar and perfect or 4 different from the others and imperfect. Carpels of the ovary 4, distinct or nearly so ; styles terminal, united ; stigma entire or 4-lobed. Ovules 2 in each carpel, superposed or rarely collateral. Cocci usually 4, 2-valved, the endocarp cartilaginous and separating elastically. Seeds solitary or rarely 2 in each coccus, oblong ; testa crustaceous.—Shrubs, undershrubs, or rarely annuals, glabrous pubescent or hirsute, rarely tomentose. Leaves opposite, simple, pinnate with a terminal leaflet, or once or twice ternately compound, the rhachis usually articulate at each pair of leaflets and often dilated between them. Peduncles axillary or terminal, either 1-flowered and jointed with a pair of minute bracts at the joint, or bearing an umbel or dichotomous cyme of several flowers with small bracts at the base of the pedicels. Flowers red, white, purple, or blue. Calyx-segments or sepals usually valvate when the petals are valvate and sometimes also when they are imbricate, but in the latter case the sepals are usually also imbricate at the base. In some species the anthers and stigma are different in different individuals of the same variety. In most of the species the filaments of the sepaline stamens (those alternating with the petals) are longer and more distinctly clavate or capitate and glandular at the top than the petaline ones. Anthers usually very shortly stipitate, rather below the obtuse summit of the filament.

The species are all limited to Australia.

SERIES I. **Valvatæ.**—*Petals strictly valvate. Sepals usually valvate.*

Sepals as long as or longer than the petals, enclosing them in the bud. (Plants tomentose or pubescent.)
Sepals longer than the petals.
Leaves all simple. Sepals 5 to 6 lines . . . . 1. *B. grandisepala.*
Leaves mostly or all pinnate. Sepals 3 to 4 lines . . . . 2. *B. artemisiæfolia.*
Sepals (about 2 lines) of the size of the petals. Leaves pinnate.
Leaflets small, ovate, numerous. Pedicels slender . . . . 4. *B. filicifolia.*
Leaflets linear. Pedicels very short . . . . 3. *B. affinis.*
Sepals much smaller than the petals.
Inflorescence entirely or mostly terminal.
Cymes terminal, leafy. Leaves pinnate. Flowers large . . 5. *B. alata.*
Flowers small, 1 to 3 together in the forks of spreading dichotomous stems. Common petiole very short.
Leaflets usually 5, obovate, about 2 lines, thick, glabrous and green on both sides. Flowers almost sessile . . . 6. *B. algida.*
Leaflets 3, obovate-oblong, about 3 lines, pale underneath. Pedicels slender . . . . 7. *B. Edwardsii.*
Inflorescence entirely axillary.
Peduncles 1-flowered.
Leaflets 3, sessile.
Leaflets small, obovate, coriaceous, flat.
Leaves glabrous. Peduncles as long as the leaves . . 8. *B. calophylla.*
Leaves tomentose. Flowers almost sessile . . . . 9. *B. ternata.*
Leaflets linear, revolute at the margin. Flowers almost sessile . . . . 10. *B. ericifolia.*
Leaflets 3 or more, with a distinct common petiole.
Leaflets (about 5) linear, thick, but flat. Flowers glabrous, minute . . . . 11. *B. inconspicua.*
Leaflets (usually 5 or 7) obovate or cuneate, glabrous, complicate. Flowers tomentose, rather large . . . 12. *B. eriantha.*
Leaflets 7 to 13 or more, small, linear or oblong, the margins revolute. Sepals lanceolate, subulate-acuminate . . . . 13. *B. alulata.*
Leaflets 3, rarely 5, the margins recurved or revolute, tomentose or hoary underneath . . . . 14. *B. ledifolia.*
Leaves simple.
Leaves linear or linear-lanceolate. Flowers about 4 lines 14. *B. ledifolia.*
Leaves oblong-lanceolate. Flowers about 2 lines . . . 15. *B. lanceolata.*
Peduncles bearing an umbel of several flowers.
Leaves simple, lanceolate, tomentose underneath. Flowers small. . . . . 15. *B. lanceolata.*
Leaves mostly pinnate, with few distant leaflets. Flowers 3 to 6 lines.
Glabrous or slightly hoary . . . . 16. *B. Fraseri.*
Softly hirsute or tomentose . . . . 17. *B. mollis.*

SERIES II. **Heterandræ.**—*Petals imbricate. Sepaline anthers different from the others, and often imperfect. Stigma usually thick and fleshy. Leaves mostly pinnate. Leaflets linear. Peduncles axillary, 1-flowered.*

Sepaline anthers large, black, or purple.
Glabrous. Leaflets 1 to 3, nearly sessile, heath-like. Petals dark purple outside, yellowish inside . . . . 18. *B. megastigma.*

Glabrous. Leaflets single, long and linear, or 3 with a long petiole. Flowers pink . . . . 19. *B. heterophylla.*
Branches hirsute. Leaflets several, in distant pairs. Flowers pink . . . . 20. *B. elatior.*
Sepaline anthers very small.
Branches hirsute. Leaflets several, in rather distant pairs. Sepaline filaments long and inflected . . . . 21. *B. tetrandra.*
Glabrous or slightly pubescent. Leaflets crowded on a short petiole. Sepaline filaments very short . . . . 22. *B. crassifolia.*

SERIES III. **Pinnatæ.**—*Petals imbricate. Anthers nearly uniform. Leaves pinnate. Peduncles mostly axillary.*

Peduncles all 1-flowered. (Western species.)
Low or diffuse undershrubs or shrubs. Leaflets linear-cuneate, obtuse, crowded on a short petiole.
Branches hirsute. Flowers nearly sessile. Stigma conical . 23. *B. albiflora.*
Branches pubescent. Flowers shortly pedicellate. Stigma depressed, 4-lobed, radiating . . . . 22. *B. crassifolia.*
Stems erect, virgate, hirsute. Leaflets linear-terete. Flowers nearly sessile. Sepals usually lanceolate-subulate . . . 24. *B. lanuginosa.*
Erect shrubs. Leaflets in distant pairs. Flowers pedunculate. Sepals broad.
Pedicels shorter than the leaves, thickened upwards . . . 25. *B. pulchella.*
Pedicels long and slender . . . . 26. *B. gracilipes.*
Peduncles mostly 3- or several-flowered. (Eastern species.)
Glabrous. Leaflets small, thick, obovate . . . . 27. *B. microphylla.*
Glabrous. Leaflets linear or oblong in distant pairs . . . . 28. *B. pinnata.*
More or less pubescent. Leaflets crowded, the lowest pair close to the stem . . . . 29. *B. pilosa.*

SERIES IV. **Cyaneæ.**—*Petals imbricate. Anthers nearly uniform. Leaves simple or 3-foliolate, or the terminal leaflet or all three again 3-foliolate. Flowers axillary, blue or bluish. Filaments usually much flattened.* (*Cyanothamnus*, Lindl.)

Leaves or leaflets short, oblong or cuneate, thick. Appendage of the anthers small.
Lower branchlets divaricate, spinescent. Sepals leafy . . . 30. *B. spinescens.*
No thorns. Sepals usually small . . . . 31. *B. cærulescens.*
Leaves or leaflets narrow-linear or subulate. Appendage of the anthers long and broad.
Flowers pedicellate.
Annual. Leaves all simple . . . . 32. *B. tenuis.*
Undershrub or shrub. Leaves mostly compound . . . . 33. *B. ramosa.*
Flowers sessile, or nearly so. Leaves simple, linear-terete . . 39. *B. subsessilis.*

SERIES V. **Variabiles.**—*Petals imbricate. Anthers nearly uniform. Leaves simple or 3-foliolate, or the terminal leaflet or all three again 3-foliolate. Flowers axillary, red or pink.*

Terminal leaflets or all three dentate, or again 3- or 5-foliolate.
Erect or spreading shrub. Peduncles usually 3- to 5-flowered 35. *B. anemonifolia.*
Leaves mostly 3-foliolate.
Common petiole distinct.
Leaflets flat, linear oblong or obovate. Anthers apiculate. Pedicels 1-flowered . . . . 34. *B. polygalifolia.*
Leaflets linear-terete, mucronate. Anthers not apiculate. Pedicels 1- to 3-flowered . . . . 36. *B. falcifolia.*
Leaflets sessile. Flowers minute. Appendage of the anthers broad, ciliate . . . . 37. *B. penicillata.*
Leaves all simple.
Leaves flat.
Leaves obovate or broadly cuneate, often denticulate . . . 42. *B. crenulata.*

- Leaves linear or lanceolate, acute, or the lower ones rarely cuneate.
    - Low undershrub. Flowers all axillary. Sepals short . 34. *B. polygalifolia.*
    - Virgate shrub. Flowers all axillary. Sepals lanceolate-subulate, elongated . 38. *B. crassipes.*
    - Small branching shrub. Flowers many of them terminal . 46. *B. viminea.*
- Leaves linear-terete.
    - Flowers all axillary. Appendage of the anthers large . 39. *B. subsessilis.*
    - Flowers many of them terminal. Anthers minutely or not at all apiculate . 41. *B. nematophylla.*

SERIES VI. **Terminales.**—*Petals imbricate. Anthers nearly uniform. Leaves all simple* (*except in* B. filifolia, inornata, *and* oxyantha). *Flowers mostly or all terminal, sessile or on short* 1*-flowered peduncles.*

- Terminal flowers sessile, capitate.
    - Leaves linear-terete.
        - Branches hirsute. Leaves very obtuse . 40. *B. capitata.*
        - Glabrous. Leaves mucronate or acute . 41. *B. nematophylla.*
    - Leaves obovate or spathulate, often crenulate . 42. *B. crenulata.*
    - Leaves rhomboidal, serrulate . 43. *B. serrulata.*
- Terminal flowers solitary, or rarely 2 or 3, sessile or shortly pedicellate.
    - Leaves obovate-orbicular, coriaceous . 44. *B. rhomboidea.*
    - Leaves linear or lanceolate, rarely oblong-cuneate, flat.
        - Small undershrub. Filaments nearly glabrous. Anthers not apiculate . 45. *B. parviflora.*
        - Slender shrub. Filaments woolly. Anthers apiculate . 46. *B. viminea.*
    - Leaves or leaflets linear-terete.
        - Leaves simple, or leaflets 3 on a distinct petiole. Pedicels slender . 47. *B. filifolia.*
        - Leaflets mostly 3 or 5, small, clustered on a very short common petiole.
            - Sepals broad, short. Petals slightly pointed . 48. *B. inornata.*
            - Sepals lanceolate-subulate. Petals mucronate . 49. *B. oxyantha.*

SERIES VII. **Pedunculatæ.**—*Petals imbricate. Anthers nearly uniform. Leaves all simple. Peduncles terminal, several-flowered, or very rarely* 1*-flowered.*

- Leaves (usually numerous) small, sessile or nearly so, with revolute margins.
    - Leaves linear or oblong.
        - Roughly pubescent or hirsute. Peduncles slightly exceeding the last leaves. Sepals subulate-acuminate . 50. *B. scabra.*
        - Glabrous or slightly pubescent. Peduncles much longer than the last leaves. Sepals broad, short . 51. *B. thymifolia.*
    - Leaves ovate-cordate. Peduncles long . 52. *B. ovata.*
- Leaves flat, usually thick, glabrous, contracted at the base.
    - Leaves small, obovate or oblong, mostly denticulate. Cymes umbel-like. Peduncles short. Pedicels long. Sepals large 53. *B. fastigiata.*
    - Leaves elongated, mostly denticulate. Cymes shortly pedunculate, loose. Sepals small . 54. *B. denticulata.*
    - Leaves entire, thick; lower ones spathulate; upper ones narrow or linear, distant. Flowers large, few, or in a loose dichotomous panicle . 55. *B. spathulata.*
- Leaves linear-terete.
    - Leaves few, thick, and small. Sepals lanceolate-subulate, nearly as long as the small petals . 56. *B. juncea.*
    - Leaves numerous. Cymes many-flowered, on long peduncles. 57. *B. cymosa.*
    - Branches slender, divaricate. Leaves slender. Peduncles short, mostly 1-flowered . 47. *B. filifolia.*

SERIES I. VALVATÆ.—Petals valvate.

1. **B. grandisepala,** *F. Muell. Fragm.* i. 66. A shrub with tomentose branches. Leaves simple, nearly sessile, oblong-lanceolate, obtuse, 1 to 1½ in. long, softly hoary-tomentose on both sides, the edges flat, the midrib very prominent underneath. Pedicels axillary, solitary, short, 1-flowered. Sepals ovate or ovate-lanceolate, tomentose, valvate, attaining 5 or 6 lines. Petals valvate and tomentose like the sepals, but smaller, and enclosed in them in the bud. Filaments slightly hirsute, clavate and glandular at the top. Anthers scarcely apiculate. Ovary pubescent.

N. Australia. M'Adam range, *F. Mueller.*

2. **B. artemisiæfolia,** *F. Muell. Fragm.* i. 66. A shrub, clothed all over with a soft hoary close or velvety tomentum. Leaves all or nearly all pinnate. Leaflets 7 to 11 or more, crowded on a short common petiole, linear, obtuse, rarely exceeding ½ in. and often much shorter, the margins closely revolute. Peduncles axillary, solitary, short, 1-flowered. Sepals lanceolate, tomentose, valvate, attaining 3 to 4 lines. Petals lanceolate, valvate and tomentose like the sepals, but smaller and enclosed in them in the bud. Filaments slightly hirsute, clavate and glandular at the top. Anthers scarcely apiculate. Ovary pubescent. Seeds smooth but scarcely shining.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown;* M'Adam, Fitzroy, and Sea ranges, *F. Mueller.*

Var. *Wilsoni,* F. Muell. Branches more villous. Leaflets short, oblong, and less crowded. — N.W. coast, *Bynoe;* Vansittart's Bay, *A. Cunningham;* Victoria river, *Wilson.*

F. Mueller, Fragm. ii. 179, refers this species as a variety to *B. grandisepala*, and some of R. Brown's specimens have some of the leaves undivided; yet I have seen no approach to the large flowers of *B. grandisepala*, and I retain the two as distinct until really intermediate specimens shall have been observed.

3. **B. affinis,** *R. Br. Herb.* A shrub, with numerous slender divaricate branches, pubescent when young, at length glabrous. Leaves pinnate; leaflets 7 to 15, linear, obtuse, mostly 3 to 4 lines long, the margins revolute, pubescent when young, glabrous at least above when full-grown, the pairs distant. Pedicels very short, axillary, 1-flowered. Sepals broadly lanceolate, subulate-acuminate, 2 to nearly 3 lines long, slightly pubescent, very thin but apparently valvate. Petals similar to the sepals, and about the same length, but narrower, valvate. Filaments clavate, and glandular at the top. Anthers scarcely apiculate. Seeds smooth, but scarcely shining.

N. Australia. Islands of the Gulf of Carpentaria, and mainland opposite Groote Eyland, *R. Brown.* (*Hb. R. Br.*)

4. **B. filicifolia,** *A. Cunn. Herb.* Branches rather slender, tomentose-pubescent or villous. Leaves pinnate; leaflets 12 to 20 pairs, with a terminal odd one, ovate or oblong, 1 to 2 lines long, pubescent, the margins slightly recurved. Peduncles axillary, slender, often ½ in. long, bearing a single small flower. Sepals lanceolate-valvate, tomentose, attaining about 2 lines. Petals lanceolate, valvate and tomentose, like the sepals, and of the same size. Filaments clavate and glandular upwards. Anthers shortly apiculate. Style pubescent.

N. Australia. York and Montague sounds, N.W. coast, *A. Cunningham.*

5. **B. alata,** *Sm. in Trans. Linn. Soc.* viii. 283. A shrub, usually quite glabrous and somewhat glaucous, but occasionally sprinkled with a slight pubescence, especially on the under side of the leaves. Branches angular. Leaves pinnate; leaflets usually 7, 9, or 11, obovate or broadly oblong, often ½ in. long, very obtuse, entire or crenate. Flowers large, in terminal cymes not exceeding the last leaves. Sepals small, lanceolate. Petals attaining 5 lines, acute, valvate in the bud, glabrous outside without prominent midribs, minutely tomentose with a ciliate midrib inside, the young buds very angular. Filaments ciliate, obtuse and glandular at the top. Anthers minutely apiculate. Ovary pubescent. Seeds opaque but smooth.—Sweet, Fl. Austral. t. 48; Bartl. in Pl. Preiss. i. 169; *Zanthoxylum oppositifolium*, DC. Prod. i. 728.

W. Australia. King George's Sound, *R. Brown*, *Fraser*, and others; Champion Bay, *Bowen;* Bald Island and Harvey river, *Oldfield;* Mount Manypeak, *Maxwell;* Rocky Bay and Rottenest Island, *Preiss*, *n.* 2012 (*Bartling*). I have not myself seen Preiss's specimens.

6. **B. algida,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 100. A glabrous stunted shrub, with numerous dichotomous or divaricate branches. Leaves pinnate, with a very short common petiole; leaflets usually 5, the lowest pair close to the stem, obovate, rarely 2 lines long, thick and rigid. Flowers solitary at the ends of the branches or in the forks, on very short pedicels. Sepals small, acute. Petals ovate-lanceolate, valvate, attaining nearly 3 lines. Filaments glabrous or nearly so, thickened and glandular upwards; anthers minutely apiculated. Stigma globular.

N. S. Wales. Upper Clarence river, also Mounts Latrobe, Hotham, and Kosciusko, *F. Mueller.*

7. **B. Edwardsii,** *Benth.* A dichotomous shrub, nearly allied to *B. algida*, and possibly a variety. Branches pubescent. Leaflets 3, almost sessile, obovate or oblong, obtuse, attaining sometimes 3 lines, glabrous or slightly pubescent, pale underneath. Flowers solitary or 2 or 3 together, terminal or in the forks of the branches, on distinct slender pedicels. Petals valvate. Filaments glabrous. Anthers tipped with recurved points or appendages. Stigma globular.

S. Australia. Mount Barker, *Edwards.* I have seen only a single small specimen. (*Hb. F. Muell.*)

8. **B. calophylla,** *Turcz. in Bull. Mosc.* 1852, ii. 160. A glabrous, rigid, much-branched shrub. Leaves 3-foliolate or rarely simple, the common petiole exceedingly short; leaflets sessile, obovate, very obtuse, 2 or rarely nearly 3 lines long, glabrous, thick and rigid. Flowers rather large, hoary-tomentose, on 1-flowered peduncles, longer than the leaves, hoary-tomentose as well as the branchlets. Sepals small, ovate. Petals attaining 3 lines or rather more, valvate in the bud, with the midrib prominent outside. Filaments slightly ciliate, obtuse and glandular at the top; anthers minutely apiculate. Ovules almost collateral. Cocci glabrous. Seeds smooth but opaque.

W. Australia, *Drummond*, 5*th Coll. n.* 205.

9? **B. ternata,** *Endl. Nov. Stirp. Dec.* 6. Branches rigid, with a minute ashy pubescence. Leaflets 3, sessile, obovate, very obtuse, not above 2 lines long, densely hoary-tomentose on both sides. Pedicels axillary, solitary, scarcely $\frac{1}{4}$ line long. Sepals tomentose, ovate, acute, about 1 line long. Petals twice as long as the calyx, pale pink, tomentose-pubescent. Filaments dilated upwards; anthers apiculate. Cocci stellate-tomentose.

W. Australia. In the interior, *Roe.* I have not seen this plant; the æstivation of the petals is not described; if it be valvate, the species must be closely allied to *C. calophylla*, differing chiefly in the tomentose leaves and almost sessile flowers.

10. **B. ericifolia,** *Benth.* An erect, branching, heath-like shrub, the young branches hoary-tomentose. Leaves 3-foliate or simple; leaflets sessile, linear with the margins closely revolute so as to be almost terete, obtuse, 3 or 4 lines long, glabrous. Flowers axillary, nearly sessile, hoary-tomentose. Sepals lanceolate, valvate. Petals about twice as long, attaining 3 lines or rather more, valvate, with the midrib prominent outside. Filaments glabrous, glandular and obtuse at the top; anthers with a minute recurved appendage. Style glabrous, with a more or less capitate stigma. Cocci rather large. Seeds opaque, but not seen quite ripe.

W. Australia, *Drummond, Coll.* 1843, *n.* 46.

11. **B. inconspicua,** *Benth.* A glabrous, rigid shrub. Leaves pinnate; leaflets 3, 5, or 7, linear, very obtuse, rarely $\frac{1}{2}$. in long, thick and rigid, the pairs distant, the rhachis thick and somewhat dilated between the leaflets. Peduncles axillary, short, bearing single, minute, glabrous flowers. Sepals rather thin, ovate, obtuse. Petals 2 or 3 times as long, in our specimens not exceeding 1 line, but perhaps not fully developed, valvate, somewhat concave, slightly inflexed at the tip. Filaments flattened, ciliate, not thickened at the top; anthers all very small, not apiculate. Ovary glabrous. Style very small, with a rather large globular stigma. Cocci about 2 lines long, glabrous. Seeds opaque, glandular-tuberculate.

W. Australia, *Drummond, n.* 212. The immediate affinities of this species are not very clear. It is in some respects nearer to some of the *Pinnatæ* than to the *Valvatæ* generally, but as far as our specimens go I cannot trace any immediate connection with any species of either group.

12. **B. eriantha,** *Lindl. in Mitch. Trop. Austr.* 298. A glabrous shrub, the branches angular. Leaves pinnate; leaflets 3 to 9, obovate or oblong-cuneate, obtuse or with a recurved point, rarely above 3 lines long, rather thick, and often folded upwards lengthwise, the margins never recurved. Peduncles axillary, short, 1- or rarely 2-flowered. Sepals ovate, acute, glabrous outside, minutely tomentose inside. Petals more than twice as long, attaining 3 or 4 lines, rather narrow, valvate, hoary-tomentose outside, with a prominent midrib. Filaments usually ciliate; anthers apiculate.

Queensland, *Bidwill;* near Mount Pluto, *Mitchell.* With the aspect of *B. microphylla* this has the floral characters of *B. ledifolia*, with which F. Mueller proposes to unite it, but besides a totally different habit, the leaflets are thick, equally green on both sides, with the margins flat or folded upwards, not recurved with a pale or hoary-tomentose undersurface as in *B. ledifolia.*

13. **B. alulata,** *Soland. in Herb. Banks.* Apparently a divaricate or diffuse shrub, the young branches glandular-tomentose. Leaves pinnate; leaflets 7 to 13 or even more, oblong or linear, rarely almost ovate, obtuse, 2 to 3 lines long, the margins revolute, glabrous above when full-grown, hoary-tomentose

underneath. Peduncles very short, axillary, 1-flowered. Sepals lanceolate, subulate-acuminate, from ½ to nearly as long as the petals. Petals about 3 lines long, mucronate, valvate in the bud but rather broad, glabrous outside with a prominent midrib, slightly tomentose inside. Filaments clavate and glandular upwards.

Queensland. Endeavour river, *Banks* and *Solander, R. Brown.* (*Hb. Brit. Mus. and R. Br.*)

14. **B. ledifolia,** *J. Gay; DC. Prod.* i. 722. An erect shrub, the young branches glandular-tomentose. Leaves simple, 3-foliolate, or rarely pinnately 5- or even 7-foliolate; leaflets linear, oblong-linear, lanceolate or rarely broadly oblong, when single often above 1 in. long, when several rarely above ½ in., the margins recurved or revolute, glabrous above when full-grown, hoary or rusty underneath with a minute tomentum. Peduncles axillary, 1-flowered, shorter than the leaves. Sepals broad, obtuse but valvate. Petals twice as long or more, attaining 4 or 5 lines, valvate in the bud, minutely tomentose outside, with a prominent midrib. Filaments short, as in several allied species, slightly ciliate or glabrous, clavate and glandular upwards; anthers more or less apiculate. Ovules usually, as in some allied species, almost or quite collateral. Style clavate, with a slightly furrowed stigma. Seeds smooth but not shining.—Reichb. Icon. Exot. t. 74; *Lasiopetalum ledifolium,* Vent. Jard. Malm. under n. 59; *Eriostemon paradoxum,* Sm. in Rees, Cycl. xiii.; *Boronia (?) paradoxa,* DC. Prod. i. 722.

Queensland. Burnett river, *F. Mueller;* Moreton Bay and islands, *A. Cunningham, Fraser, etc.*

N. S. Wales. Port Jackson and Blue Mountains, *R. Brown, Sieber. n.* 297 and 303, and *Fl. Mixt. n.* 531 and 534, and others.

Var. *rosmarinifolia.* Leaves rigid, usually narrow, small, and all simple. Peduncles very short.—*B. rosmarinifolia,* A. Cunn. in Hueg. Enum. 16. To this form belong especially most of the Moreton Bay specimens.

Var. (?) *triphylla.* Leaves mostly or all 3-foliolate, or the lower ones pinnate.—*B. triphylla,* Sieb. in Spreng. Syst. Cur. Post. 148; Reichb. Icon. Exot. t. 73; apparently as common about Port Jackson as the large simple-leaved form. A subvariety, with broader leaflets, is figured Bot. Reg. 1841, t. 47, and Paxt. Mag. viii. 123.

Var. (?) *rubiginosa.* Leaflets 3 or 5, still broader, almost obovate. Peduncles, according to Endlicher, 3-flowered, but 1-flowered in our specimens.—*B. rubiginosa,* A. Cunn. Herb., Endl. in Hueg. Enum. 16; Hunter's River, *A. Cunningham.*

B. ledifolia is enumerated also (Pl. Preiss. ii. 226) amongst W. Australian plants, a very unlikely station. I have not seen Preiss's specimen n. 2644, nor any western species agreeing with the character given, and therefore have no clue to the plant referred to. F. Mueller, presuming like myself that it cannot be Gay's plant, proposes (Fragm. i. 67) to give it the name of *B. ledophylla;* but without seeing specimens it is impossible to characterize it.

15. **B. lanceolata,** *F. Muell. Fragm.* i. 66. A tall shrub with tomentose branches. Leaves simple, petiolate, oblong-lanceolate, obtuse or mucronulate, 1 to 2 in. long, flat or the margins recurved, glabrous above, tomentose underneath. Peduncles very short, bearing an umbel of 3 to 5 small flowers, rarely reduced to a single flower. Sepals small, ovate, with a subulate point, sometimes very short, sometimes nearly as long as the petals. Petals broad, attaining about 2 lines in length, valvate in the bud, tomentose outside with a prominent midrib. Filaments glabrous, thickened and glan-

dular at the top; anthers scarcely apiculate. Cocci glabrous. Seeds smooth but not shining.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown;* Port Essington, *Armstrong, Leichhardt.* Stony places in Arnhem's Land and Carpentaria, *F. Mueller.*

16. **B. Fraseri,** *Hook. Bot. Mag. t.* 4052. A shrub of 3 or 4 ft., the branches glabrous, angular or compressed. Leaves pinnate; leaflets 3 or 5, in distant pairs, oblong-lanceolate, obtuse, the terminal one usually 1 to 1½ in. long, the others smaller, all glabrous but pale underneath. Peduncles axillary, short, bearing an umbel of 3 to 6 flowers. Sepals very small. Petals attaining fully 3 lines, valvate, hoary outside, with a prominent midrib. Filaments glabrous, much thickened and glandular at the top; anthers minutely apiculate. Disk very thick. Stigma capitate but small.—*B. anemonifolia*, Paxt. Mag. Bot. ix. 123, with a fig., not A. Cunn.

N. S. Wales. Ravines on the Nepean river, *Fraser.*

17. **B. mollis,** *A. Cunn.; Lindl. Bot. Reg.* 1841, *under t.* 47. A shrub, with the habit of *B. Fraseri,* but the branches and petioles densely and softly hirsute. Leaflets usually 3 or 5, in distant pairs, the terminal one oblong or lanceolate, obtuse, 1 to 1½ in. long, the others much shorter and broader in proportion, all glabrous or nearly so above, tomentose-pubescent or villous underneath. Peduncles axillary, very short, bearing an umbel of several flowers larger than those of *B. Fraseri.* Sepals linear. Petals ovate-acuminate, attaining 5 or 6 lines, valvate. Stamens and style of *B. Fraseri.*

N. S. Wales. Nepean river, *A. Cunningham;* near Sydney, *Lyall.*

SERIES II. HETERANDRÆ.—Sepaline anthers usually different from the petaline ones, and often imperfect.

18. **B. megastigma,** *Nees, in Pl. Preiss.* ii. 227. A shrub, with erect virgate branches, glabrous or nearly so. Leaflets 3 or rarely 5, sessile or with a very short common petiole, linear, obtuse, rarely ½ in. long, rather thick and rigid, glabrous. Peduncles axillary, 1-flowered, the pedicel much thickened under the flower. Sepals short, broad, obtuse. Petals attaining about 3 lines, broad and much imbricate, of a dark purple outside, drying almost black, yellowish inside. Filaments glabrous, rather attenuate and incurved at the top, the 4 longer ones opposite the sepals with large purple anthers, the 4 smaller opposite the petals with small yellow anthers close under the stigma. Stigma purple, very broad and thick, truncate at the top, expanded laterally into 4 thick prominent lobes.—F. Muell. Fragm. ii. 97; *B. tristis,* Turcz. in Bull. Mosc. 1852, ii. 162.

W. Australia. King George's Sound and neighbouring districts, *Milne, Preiss, n.* 1232; *Drummond,* 5*th Coll. n.* 201, and others. In this and the two following species the large purple or black anthers are said to be barren, and the pollen perfect only in the very small yellow petaline anthers, a point I am unable to ascertain positively from dried specimens.

19. **B. heterophylla,** *F. Muell. Fragm.* ii. 98. A tall glabrous shrub, with numerous slender branches. Leaves either simple and linear, 1 to 2 in. long, or pinnate, with 3 or 5 linear leaflets on an elongated common petiole. Peduncles axillary, 1-flowered, slender below the bracts, thickened

under the flower. Sepals very short and orbicular. Petals attaining about 4 lines, broad and imbricate, glabrous outside, pubescent inside, apparently pink. Filaments glabrous, the larger ones opposite the sepals, thickened and much incurved at the top, with large ovoid black anthers, the smaller ones with small yellow anthers. Ovary ciliate-hirsute, with a thick conical deciduous style. Cocci pubescent. Seeds smooth and shining.

W. Australia, *Drummond, n.* 117. In places sometimes inundated, on the Kalgee river, *Maxwell.*

20. **B. elatior,** *Bartl. in Pl. Preiss,* i. 170. Apparently a tall shrub, the branches hirsute with long spreading hairs. Leaves pinnate; leaflets 5 to 13 or more, linear, flat, rather rigid, often $\frac{1}{2}$ in. long or even more, glabrous or hirsute, the pairs rather distant with the rhachis often dilated between them. Peduncles axillary, often as long as the common petiole. Sepals broad, mucronate, usually ciliate and often coloured. Petals attaining 3 to 4 lines, usually mucronate, glabrous or slightly pubescent, much imbricate. Filaments slightly ciliate, 4 opposite the sepals, thick, attenuate at the top, with large black anthers, 4 opposite the petals incurved at the top, with minute yellowish anthers close under the stigma. Ovary hirsute with a very large glabrous, thick, obtusely pyramidal stigma, 4-lobed at the base. Seeds smooth and shining.—*B. semifertilis, F. Muell. Fragm.* ii. 98.

W. Australia, *Drummond, n.* 36, 43, and 118. King George's Sound, *R. Brown;* Darling Range, *Preiss, n.* 2013; Wilson's Inlet, *Oldfield;* Franklin river, *Maxwell.*

B. psoraleoides, DC. Prod. i. 721, from the S. coast, is unknown to me; it is described as having pinnate leaves, with 3 or 5 linear obtuse leaflets, glabrous and glandular-dotted as well as the branches; peduncles short, 1-flowered; flowers small, pale, tetrandrous. It would therefore rank among the *Heterandræ,* which however have usually rather large flowers.

21. **B. tetrandra,** *Labill. Pl. Nov. Holl.* i. 98, *t.* 125. An erect much-branched shrub, the branches more or less hirsute with spreading hairs. Leaves pinnate; leaflets usually 7 to 13, linear, obtuse, the largest rarely above 4 lines long, the upper ones of each leaf usually gradually shorter, all flat or the margins slightly recurved, glabrous or slightly hirsute, the pairs rather distant. Peduncles axillary, 1-flowered, very short. Sepals broadly ovate. Petals attaining 3 or 4 lines, glabrous, imbricate. Filaments slightly ciliate, 4 opposite the petals short, thick, with perfect anthers, shortly apiculate, 4 opposite the sepals longer and more slender, inflected at the top, with minute apparently imperfect anthers. Disk with 4 lobes inside the sepaline stamens, almost as in *Zieria.* Ovary small, glabrous; stigma very large and thick, truncate at the top with 4 very prominent almost winged lateral lobes.—*B. bicolor,* Turcz. in Bull. Mosc. 1852, ii. 163.

W. Australia, *Drummond, 5th Coll. n.* 200. Cape Leeuwin, *Labillardière.* Labillardière's specimen has very few small flowers, which I have been unable to examine, but Drummond's agrees with it in every other respect, as well as with his figure and description, except that the flowers are rather larger.

22. **B. crassifolia,** *Bartl. in Pl. Preiss.* i. 169. A dwarf much-branched shrub or undershrub, not exceeding 8 in. in any of our specimens, glabrous or minutely pubescent. Leaves pinnate; leaflets 3, 5, or 7, on a short common petiole, linear-cuneate or oblong-linear, very obtuse, rarely $\frac{1}{2}$ in. long and often much smaller, rather thick and coriaceous. Peduncles axil-

lary, 1- or rarely 2-flowered, short, and often recurved. Sepals ovate, minutely pubescent. Petals attaining 3 lines, imbricate and nearly glabrous. Filaments 4 opposite the sepals, thick, attenuate at the top, with perfect shortly apiculate anthers, 4 opposite the petals shorter, clavate, glandular, with anthers usually minute and less perfect. Ovary minutely pubescent. Stigma very large and thick, broadly conical and peltate.—*B. humilis*, Turcz. in Bull. Mosc. 1852, ii. 160.

W. Australia, *Drummond*, *5th Coll. n.* 199, and *Coll.* 1843, *n.* 59; *Bynoe*, *Preiss*, *n.* 2033.

B. multicaulis, Turcz. in Bull. Mosc. 1852, ii. 160, appears to refer to some unnumbered specimens in Drummond's 5th Coll., agreeing in every respect with *B. crassifolia*, except that the anthers of the sepaline stamens are more perfect, and the stigma is reduced to 4 glabrous radiating lobes, closely adnate on a pubescent surface, not distinguishable from the apparently imperfect ovary. I have seen but few flowers of this form, but believe the differences from *B. crassifolia* to be rather sexual than specific.

SERIES III. PINNATÆ.—Anthers uniform. Leaves pinnate. Peduncles axillary.

23. **B. albiflora,** *R. Br. Herb.* A dwarf, much-branched, erect undershrub or shrub, hirsute with short spreading hairs. Leaves pinnate; leaflets 7 to 11, crowded on a short common petiole, oblong-linear, slightly cuneate, very obtuse, rather coriaceous, the margins often recurved, the lowest of each leaf often 4 or 5 lines long, the others gradually smaller. Flowers small, axillary, nearly sessile. Sepals ovate or lanceolate, ciliate. Petals attaining about 2½ to 3 lines, imbricate, glabrous. Filaments glabrous, clavate and glandular at the top. Anthers all perfect, distinctly apiculate. Ovary pubescent. Style conical with a small stigma. Cocci pubescent or glabrous. Seeds smooth.

W. Australia. South coast, *R. Brown;* King George's Sound, *Baxter;* Garden Range, hills N. of Stirling range, and Cheynye Beach, *Maxwell.*

Some specimens of this plant, with fewer and less crowded leaflets, have the aspect of *B. crassifolia*, but the larger filaments are not attenuate at the top, the anthers more distinctly apiculate, and the style quite different.

24. **B. lanuginosa,** *Endl. in Hueg. Enum.* 16. Stems erect, simple or with erect virgate branches, 1 to 2 ft. high, hirsute with spreading hairs, hard and woody at the base. Leaves pinnate; leaflets 5 to 9 or rarely more, linear-terete or slightly flattened and cuneate, mostly acute, rarely ½ in. long, glabrous or hirsute, somewhat crowded on a rather short common petiole. Peduncles axillary, short, or the flowers almost sessile. Sepals usually lanceolate-subulate, more than half as long as the petals. Petals attaining nearly 4 lines, mucronate, imbricate, slightly pubescent, deeply coloured in the centre. Filaments glabrous or ciliate, the longer ones especially thickened and glandular at the top; anthers all perfect, shortly apiculate. Stigma small.—*B. stricta*, Bartl. in Pl. Preiss. i. 169.

W. Australia, *Drummond, Coll.* 1845, *n.* 9; King George's Sound and neighbouring districts, *R. Brown; Preiss, n.* 2034; *Maxwell.* I have not seen specimens named by Endlicher, but this is the only species of R. Brown's (with whom F. Bauer collected) which answers to the short diagnosis given.

Var. (?) *brevicalyx.* Sepals very small, without the long point of the common form.—Phillips River, *Herb. Mueller.*

B. pubescens, Bartl. in Pl. Preiss. ii. 227; from W. Australia, *Preiss, n.* 2643, is unknown to me, but from the description given it would appear to be a small-flowered variety of *B. lanuginosa.*

25. **B. pulchella,** *Turcz. in Bull. Mosc.* 1852, ii. 162. An erect branching shrub, perfectly glabrous, or the young branches minutely pubescent or shortly hirsute. Leaves pinnate; leaflets usually 7 to 11, linear, rather obtuse, rarely above 4 lines long, rather rigid, flat or the margins slightly recurved, the pairs not crowded, the rhachis often dilated. Flowers large, of a rich pink, on axillary peduncles usually shorter than the leaves and rather thickened under the flowers. Sepals short, broad and acute. Petals attaining 3 to 4 lines, imbricate, glabrous. Filaments glabrous, capitate and glandular at the top; anthers scarcely apiculate. Ovary slightly hirsute. Stigma capitate, rather large. Cocci glabrous. Seeds smooth, opaque, but not seen quite ripe.—*B. Drummondii*, Planch. in Fl. des Serres, ix. 65, t. 881; *B. tetrandra*, Lindl. and Paxt. Fl. Gard. i. 35, t. 8, not Labill.; and perhaps also Paxt. Mag. xvi. 227.

W. Australia, *Drummond, n.* 13; 5*th Coll. n.* 202; S.W. interior, *Maxwell.*

26. **B. gracilipes,** *F. Muell. Fragm.* ii. 99. An erect shrub, the branches pubescent or hirsute with spreading hairs. Leaves pinnate; leaflets usually 5 or 7, rarely 9, oblong-linear or lanceolate, rarely exceeding 4 lines, the margins entire, or when broad often denticulate, flat or slightly recurved. Peduncles slender, axillary, 1-flowered, often as long as the leaves and scarcely thickened under the flower. Sepals broad, short and acute. Petals attaining about 3 lines, imbricate, glabrous. Filaments ciliate, capitate and glandular at the top; anthers minutely apiculate. Ovary pubescent. Stigma ovoid-capitate, rather large, almost sessile.

W. Australia. Franklin and Mount Manypeak rivers, Plantagenet and Stirling ranges, *Herb. Mueller.* This may prove to be a variety of *B. pulchella*, but, as far as our specimens go, the hirsute branches, broader leaflets, and slender pedicels appear to be constant.

27. **B. microphylla,** *Sieb. in Spreng. Syst. Cur. Post.* 148. A low stunted shrub, glabrous but often very glandular. Leaves pinnate; leaflets 5 to 11, obovate or oblong-cuneate, obtuse or acute, rarely above 3 lines long, and usually about 2 lines, thick and rigid. Peduncles in the upper axils 1- to 3-flowered. Flowers of *B. pinnata*, or rather smaller, the anthers often conspicuously apiculate. Stigma slightly enlarged. Seeds in our specimens shining and reticulate.—Reichb. Icon. Exot. t. 72.

N. S. Wales. Blue Mountains, *Sieber, n.* 302; *A.* and *R. Cunningham*; Paramatta and Upper Clarence river, *Herb. Mueller.* The latter station rather doubtful, the specimen being very incomplete. F. Mueller unites this species with *B. pinnata*; but, as far as I have seen, the difference in foliage appears constant.

28. **B. pinnata,** *Sm. Tracts,* 290, *t.* 4. A glabrous shrub, attaining several feet, but sometimes dwarf or diffuse, the small branches more or less angular. Leaves pinnate; leaflets 5 to 9 or rarely more, linear or oblong-lanceolate, acute, rigid, the pairs rather distant and the common petiole often dilated between them. Flowers rather large, usually 3 or more together, in loose axillary or subterminal corymbose cymes. Sepals small, acute. Petals attaining 3 to 5 lines, imbricate, glabrous or minutely tomentose inside,

usually mucronate. Filaments woolly-hairy, especially towards the thickened summit; anthers very minutely or not at all apiculate. Style short. Seeds smooth and shining.—DC. Prod. i. 721; Andr. Bot. Rep. t. 58; Vent. Jard. Malm. t. 38; Bot. Mag. t. 1763; F. Muell. Pl. Vict. i. 115; *B. floribunda*, Sieb. in Spreng. Syst. Cur. Post. 148; Reichb. Icon. Exot. t. 71.

N. S. Wales. Port Jackson and Blue Mountains, *R. Brown*, *Sieber*, *n.* 300, 301, and *Fl. Mixt. n.* 533, and others. These specimens appear to be sexually dimorphous. In some I find the stamens densely woolly, the anthers small, 4 of them perhaps imperfect, and the very short style bearing a thick globular stigma as large as or larger than the ovary. In other specimens the filaments are shorter and not quite so woolly, the anthers larger and more perfect, the style cylindrical, with the stigma scarcely thickened.

Var. *Muelleri.* Leaflets in distant pairs. Flowers nearly as large as in the Port Jackson specimens, but the filaments much less hairy, the anthers not at all apiculate, and I am unable to detect any dimorphism; the stigma minute or slightly capitate.

Victoria. Sources of the Bunyip river, in the Grampians, near Portland Bay, and towards the mouth of the Glenelg, *F. Mueller.*

Var. *Gunnii.* Leaflets more crowded, but the lowest pair always distant from the stem. Flowers smaller than in the Port Jackson plant, with the filaments much less hairy, and the anthers and style (as far as I have been able to ascertain) homomorphous, as in the var. *Muelleri.*—*B. tetrandra*, var. *grandiflora*, Hook. Journ. Bot. ii. 419; not Labill.; *B. Gunnii*, Hook. f. Fl. Tasm. i. 68, t. 10.

Tasmania. Near Port Dalrymple, *R. Brown;* S. Esk river, near Launceston, *Gunn.*

B. citriodora, Gunn, in Hook. f. Fl. Tasm. i. 68, common in alpine situations in Tasmania (*J. D. Hooker*, *Gunn*); is generally of smaller stature, with the leaflets often reduced to 3; but it is often not distinguishable from the var. *Gunnii* in the dried state, when the peculiar lemon-scent, which it is said to be so easily known by, has entirely disappeared.

29. **B. pilosa,** *Labill. Pl. Nov. Holl.* i. 97, t. 124. A shrub, very nearly allied to *B. pinnata*, with which F. Mueller proposes to unite it, and perhaps with reason, but the aspect is different. Branches almost always more or less pubescent. Leaflets crowded on a short common petiole, the lowest pair close to the stem, usually narrower and more obtuse than in *B. pinnata.* Cymes compact, 3- or rarely 5-flowered and often reduced to single flowers, which are generally smaller than in *B. pinnata.* Filaments ciliate rather than woolly; anthers not at all apiculate. Stigma slightly enlarged, never large and globular, nor yet very minute.—DC. Prod. i. 721; Hook. f. Fl. Tasm. i. 67.

Victoria. In the Grampians, *Wilhelmi;* Portland Bay and mouth of the Glenelg' *Robertson.*

Tasmania, *R. Brown;* abundant throughout the colony, *J. D. Hooker.* In a very few Tasmanian specimens the leaflets are not quite so crowded, but their narrow form and the pubescent branches are those of *B. pilosa.*

SERIES IV. CYANEÆ.—Flowers usually blue or bluish. Foliage of the *Variabiles.*

30. **B. spinescens,** *Benth.* A glabrous undershrub with erect or ascending rigid stems of 1 to 1½ ft., the lower branchlets often converted into divaricate leafless thorns of 1 to 2 in. Leaves nearly sessile, simple, entire or 3-lobed, either ovate or lanceolate and scarcely 2 lines or rarely almost linear and 3 or 4 lines long. Peduncles axillary, 1-flowered, 2 or 3 lines long. Sepals leafy, obtuse, often fully 2 lines long. Petals not twice as long, apparently bluish. Filaments slightly dilated at the base, ciliate, terete and

glandular upwards, attenuate at the top. Appendage of the anthers much shorter than the cells and not so broad as in the other blue species.

W. Australia, *Drummond, n.* 78.

31. **B. cærulescens,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 11, and *Pl. Vict.* i. 117. An undershrub of a pale green, glabrous or minutely pubescent. Leaves simple, sessile, linear or linear-cuneate, obtuse, rarely attaining ½ in., and often only 2 or 3 lines long, rather thick, often tuberculate underneath. Pedicels 1-flowered, mostly axillary, 1 to 2 or 3 lines long. Sepals ovate. Petals twice or thrice as long as the sepals, attaining 3 to 4 lines, imbricate, glabrous, or pubescent outside along the centre. Filaments ciliate, not clavate; anthers with a short broad obtuse recurved appendage. Stigma capitate. Seeds reticulate.

Victoria. Desert of the Murray and its lower tributaries, and sterile plains at the foot of the Grampians, *F. Mueller.*

S. Australia. Sandy coast of Guichen Bay and Cape Jaffa, St. Vincent's and Spencer's Gulf, *F. Mueller* and others.

W. Australia. Salt river, S. Hutt river, and Chapman river to E. Mount Barren, *Herb. Mueller.*

32. **B. tenuis,** *Benth.* Apparently annual, quite glabrous, with slender ascending or erect branches ½ to 1½ ft. high. Leaves simple, slender, linear-terete, acute or obtuse, mostly ½ to 1 in. long. Flowers blue, on axillary pedicels of 1 to 4 or 5 lines. Sepals ovate-lanceolate, with white membranous margins. Petals about twice as long as the sepals, attaining 3 lines or rarely more, imbricate, glabrous. Filaments flat, ciliate, narrowed at the top; anthers with broad recurved appendages, nearly as long as the cells. Cocci glabrous. Seeds reticulate, striate.—*Cyanothamnus tenuis,* Lindl. Swan Riv. App. 18.

W. Australia. Swan River, *Drummond, 1st Coll.;* Ballgarup ranges W. of Kojonerup, *Herb. Mueller.*

33. **B. ramosa,** *Benth.* An erect or diffuse heath-like glabrous shrub. Leaves once or twice ternately compound; leaflets linear-terete, usually not thicker than the common petiole, ¼ to ½ in. long. Peduncles axillary, 2 to 4 or 5 lines long, bearing a single blue flower. Sepals broad and short. Petals varying from about 2 to above 3 lines long, imbricate, glabrous. Filaments broad, flat and ciliate at the base, terete, obtuse, and glandular at the top. Appendage of the anthers very broad and obtuse, usually longer than the cells. Stigma in some specimens capitate, in others small and 4-lobed. —*Cyanothamnus ramosus,* Lindl. Swan Riv. App. 18.

W. Australia. Swan River, *Drummond, 1st Coll.,* also *n.* 84 and 180; Murchison river, *Oldfield.*

Var. *anethifolia.* Leaves mostly 3-foliolate. Flowers smaller than in the original form, not so blue, at least in the dried state, with much smaller appendages to the anthers. *Cyanothamnus anethifolius,* Bartl. in Pl. Preiss. i. 179.—*Boronia subcærulea,* F. Muell. Fragm. ii. 100. Swan River, *Drummond;* Canning river, *Preiss, n.* 2035; Murchison river, *Oldfield;* Champion Bay, *Walcott.*

SERIES V. VARIABILES.—Anthers uniform. Leaves simple or ternately compound. Flowers axillary, not blue.

34. **B. polygalifolia,** *Sm. Tracts,* 297, *t.* 7. Usually a low glabrous

undershrub with a thick rhizome as in *B. parviflora*, or a small shrub, rarely stouter and 1 to 2 ft. high. Leaves either simple with lanceolate or linear-lanceolate acute leaflets, mostly under ½ in., but sometimes nearly 1 in. long, or 3-foliolate with small acute leaflets, on a short common petiole. Pedicels axillary, solitary, and 1-flowered. Sepals short. Petals 2 or 3 times as long, imbricate, pink, and glabrous. Filaments hairy and glandular towards the top. Anthers conspicuously apiculate, the appendage erect or recurved. Seeds opaque and usually minutely tuberculate.—DC. Prod. i. 722; F. Muell. Pl. Vict. i. 114; *B. hyssopifolia*, Sieb. in Spreng. Syst. Cur. Post. 148; Hook. f. Fl. Tasm. i. 66; *B. tetrathecoides*, DC. Prod. i. 722; Hook. Comp. Bot. Mag. i. 277.

Queensland. Stradbrooke Island, *Fraser*.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 296, and others; northward to Hastings and Clarence rivers, *Beckler*; New England, *C. Stuart*.

Victoria. Not rare, as well in swamps and alpine localities as in dry forest-land or on stony ridges, *F. Mueller*.

Tasmania. Abundant throughout the colony, *J. D. Hooker*.

S. Australia. Stringybark Forest, between Mount Lofty and the Onkaparinga, *F. Mueller*.

Var. *trifoliolata*. Stems short, glabrous. Leaves 3-foliolate, with linear leaflets.—*B. nana*, Hook. Ic. Pl. t. 270.—In Victoria and Tasmania. In some of the Victorian specimens, simple and trifoliolate leaves occur on different branches of the same plant.

Var. *robusta*. Leaves 3-foliolate as in the last var., but stems stout and more shrubby, attaining 2 ft. or more.—Port Jackson, *Sieber*, *n.* 283; Blue Mountains, *A. Cunningham*; Moreton Island, *F. Mueller*.

Var. (?) *pubescens*. More or less pubescent. Leaves 3-foliolate. Leaflets very small, ovate or obovate. Flowers small, the pedicels usually longer than the leaves.—In the Grampians, *Wilhelmi*, *Robertson*.

35. **B. anemonifolia,** *A. Cunn. in Field, N. S. Wales*, 330. A shrub of 2 or 3 ft., glabrous or pubescent, and often glaucous. Leaves either simply 3-foliolate with the leaflets 3-toothed, or all 3 leaflets or the terminal one only again 3-foliolate or pinnately 5-foliolate, or sometimes some of them a third time divided, and all usually thick, linear-cuneate or, if entire, acutely linear. Flowers in axillary cymes of 3, 5, or even more, very rarely reduced to single flowers. Stamens and fruit of *B. polygalifolia*.

Queensland. Newcastle and Burnett rivers, *F. Mueller*; near Lindley's Range, *Mitchell*.

N. S. Wales. E. coast, *R. Brown*; Hunter's River and Blue Mountains, *A. Cunningham* and others.

Victoria. Mountains of Gipps' Land, *F. Mueller*.

Tasmania. Derwent river, King's Island, *R. Brown*; northern parts of the island near the coast, *J. D. Hooker*.

W. Australia. Canning river, *Preiss*, *n.* 2628.

This species, which F. Mueller thinks ought to be united with *B. polygalifolia* as a variety, has by others been subdivided into 3, which may be considered as tolerably distinct races, viz.:—

a. dentigera. Pubescent or rarely glabrous. Leaflets usually 3, linear-cuneate, thick, 3-toothed at the top. Flowers 1 to 3 on each peduncle. *B. dentigera*, F. Muell. in Trans. Vict. Inst. 1855, 82; *Cyanothamnus tridactylites*, Bartl. in Pl. Preiss. ii. 227.—N. S. Wales, Victoria; Tasmania, E. coast, *C. Stuart*; W. Australia, *Preiss*, *n.* 2628.

b. variabilis. Usually glabrous. Leaves irregularly compound, more or less twice ternate, but scarcely bipinnate. Leaflets oblong, obtuse, or linear-cuneate. Flowers rather small, 3 or more in the cyme.—*B. variabilis*, Hook. Comp. Bot. Mag. i. 277 (partly); Hook. f. Fl. Tasm. i. 67.—The common Tasmanian form.

c. anethifolia. Leaves still more compound, often bipinnate, and leaflets narrower and more acute than in the last var. Flowers 3 or more in the cyme.—*B. anethifolia,* A. Cunn.; Endl. in Hueg. Enum. 16; Lindl. Bot. Reg. 1841, under n. 47; *B. bipinnata,* Lindl. in Mitch. Trop. Austr. 225.—The common form in the interior of Queensland and N. S. Wales.

36. **B. falcifolia,** *A. Cunn.; Lindl. in Bot. Reg.* 1841, *under n.* 47. A glabrous, erect, heath-like shrub, with virgate branches. Leaves rather crowded, 3-foliolate; leaflets linear-terete, mucronate, mostly ¼ to ½ in. long, on a common petiole rather shorter than themselves. Pedicels 1- to 3-flowered, in the upper axils. Bracts linear-subulate. Sepals lanceolate, subulate-pointed. Petals rather longer than the sepals, attaining 3 to 4 lines, acute, imbricate, glabrous. Filaments clavate and glandular upwards; anthers not apiculate. Stigma in some specimens capitate, in others not thicker than the style.—*B. paleifolia,* Endl. in Hueg. Enum. 16 (through a misreading of Cunningham's label).

Queensland. Moreton Bay and islands, *A. Cunningham, F. Mueller,* and others; Wide Bay, *Bidwill.*

N. S. Wales. Port Macquarie and Port Stephens, *Backhouse.*

37. **B. penicillata,** *Benth.* An erect, rather rigid shrub or undershrub, more or less pubescent. Leaves simple or 3-foliolate; leaflets sessile, linear or linear-cuneate, flat, rather thick, rarely above ½ in. long. Flowers axillary, very small, on short pedicels. Sepals broad, acute, glabrous or ciliate, very glandular. Petals about twice their length, but not exceeding 1½ lines, rather thick and glandular, with thin transparent imbricate edges. Filaments slightly flattened, ciliate, rather thickened at the top; anthers tipped with a short broad appendage, ciliate with a few rather long stiff hairs. Stigma slightly thickened. Cocci glabrous, rather longer than the petals. Seeds not seen.

W. Australia. Between Swan River and King George's Sound, *Drummond.* The species resembles *B. inconspicua* in the minuteness of its flowers, but is quite different in their structure as well as in foliage.

38. **B. crassipes,** *Bartl. in Pl. Preiss.* i. 168. Shrubby and glabrous, with elongated, rather slender, virgate branches. Leaves simple, linear, rather acute, ½ to 1 in. long, entire or serrulate. Pedicels axillary, 1-flowered, shorter than the leaves, thickened under the flower. Sepals lanceolate-subulate with long points. Petals about twice as long as the sepals, attaining fully 4 lines, acute or mucronate. Filaments slender, slightly ciliate, obtuse and glandular at the top; anthers minutely apiculate. Seeds opaque and scabrous, but not seen quite ripe.—Dietr. Fl. Univ. N. Ser. ii. t. 2.

W. Australia, *Drummond, Coll.* 1845. *n.* 10; Near Mount Wuljenup, *Preiss, n.* 2040; King George's Sound and Mount Barker, *Oldfield.*

39. **B. subsessilis,** *Benth.* Glabrous, with rigid twiggy branches. Leaves simple, sessile, linear-terete, rather obtuse, mostly ½ to ¾ in. long. Flowers sessile or on very short thickened pedicels, glabrous, apparently red. Sepals short, broadly ovate. Petals attaining 3 lines, imbricate, obtuse, of a firm consistence. Filaments flattened, ciliate, slightly thickened and obtuse and glandular at the top; anthers tipped with a large, broad, recurved appendage.

W. Australia, *Drummond.* The stamens are nearly those of some of the blue-flowered species, but the flowers are much more sessile than in any blue species and apparently red.

SERIES VI. TERMINALES.—Anthers uniform. Leaves simple or rarely 3–5-foliolate. Flowers terminal, usually solitary.

40. **B. capitata,** *Benth.* Apparently a rigid divaricate shrub. Branches pubescent or hirsute. Leaves simple, linear, obtuse, under ½ in. long in our specimen, pubescent, thick, terete or almost flat above and convex underneath. Flowers several, almost sessile, in terminal heads. Sepals rather broad, pubescent. Petals twice as long as the sepals, rather exceeding 3 lines, imbricate, glabrous. Filaments densely ciliate at the edges, slightly thickened and glandular at the top; anthers tipped with a small recurved appendage. Style pubescent, with a small stigma.

W. Australia. In the eastern regions of the colony, *Drummond.* It is possible that this may prove to be an extreme variety of *B. nematophylla*, differing chiefly in inflorescence and indumentum.

41. **B. nematophylla,** *F. Muell. Fragm.* ii. 100. An erect, virgate, or diffuse, glabrous shrub. Leaves all simple, linear-terete, obtuse acute or mucronulate, mostly ½ to 1 in. long. Flowers axillary or terminal, nearly sessile or shortly pedunculate, solitary or the terminal ones in clusters of 3 to 5. Sepals short and broad, ciliate. Petals 3 or 4 times as long as the sepals, attaining 3 or 4 lines, imbricate, glabrous. Filaments more or less woolly on the edges, clavate and glandular at the top; anthers minutely apiculate or sometimes quite obtuse. Style slender, occasionally exceeding the stamens, with a small capitate stigma.

W. Australia. King George's Sound, *Oldfield;* N. side of Stirling range and Gordon plains, *Maxwell.*

42. **B. crenulata,** *Sm. in Trans. Linn. Soc.* viii. 284. A glabrous bushy shrub. Leaves obovate or cuneate, rounded and usually (but not always) crenulate at the upper end, rarely exceeding ½ in., narrowed into a very short petiole, coriaceous and nerveless. Flowers terminal and solitary or few together, on very short pedicels or almost sessile, and also frequently solitary in the upper axils. Sepals ovate, scarious at the edges and minutely ciliate. Petals about twice as long, attaining 3 lines, broad, imbricate, and glabrous. Filaments densely woolly at the sides, obtuse at the top; anthers apiculate. Style short, often slightly pubescent. Seeds smooth and shining.—DC. Prod. i. 721; Bot. Mag. t. 3915; Bot. Reg. 1838, t. 12; Bartl. in Pl. Preiss. i. 169.

W. Australia. King George's Sound, *R. Brown, Menzies, Drummond,* and others; Stirling range, *Preiss, n.* 2010; Kalgan and Gordon rivers, *Oldfield;* and eastward to Stokes Inlet, *Maxwell.*

Var. *pubescens.* Branches pubescent. Leaves more sessile and less narrowed at the base, ciliate on the edge. Sepals narrower.—W. Australia, *Drummond;* Vasse river, *Oldfield.*

43. **B. serrulata,** *Sm. Tracts,* 292, *t.* 5. A glabrous shrub. Leaves crowded, simple, almost sessile, broadly obovate or rhomboidal, acute, rarely exceeding ½ in., serrulate, narrowed at the base, coriaceous and nerveless. Flowers rather large, terminal, nearly sessile or very shortly pedicellate, several together in a leafy compact cyme or head or rarely solitary. Sepals

acute. Petals 2 or 3 times as long as the sepals, attaining 4 lines, broad, imbricate, mucronate, glabrous. Filaments more or less hairy, clavate-globular and hispid at the top; anthers minutely apiculate. Ovary glabrous. Style short, with a large globular 4-lobed stigma. Seeds black and shining.—Sw. Fl. Austral. t. 19; Bot. Reg. t. 812; Paxt. Mag. Bot. i. 173, with a figure.

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 298, and others. Said to be known as "Native Rose" by the colonists.

44. **B. rhomboidea,** *Hook. Ic. Pl. t.* 722. A small, glabrous, much-branched, rigid shrub. Leaves simple, sessile, broadly rhomboid, obovate orbicular or almost reniform, obtuse, not exceeding ½ in., quite entire, coriaceous and nerveless. Flowers rather smaller than in *B. serrulata*, almost sessile, terminal and solitary or few together, or occasionally 1 or 2 in the axils of the next pair of leaves, surrounded by 1 or 2 pairs of floral leaves or bracts, usually spathulate and petiolate. Sepals ovate. Petals not twice as long as the sepals, attaining about 3 lines. Filaments glabrous, glandular-tuberculate, thickened upwards; anthers not apiculate. Ovary glabrous. Style rather long. Seeds apparently black and shining, but not seen quite ripe. – Hook. f. Fl. Tasm. i. 66.

Tasmania. North-west River near Hobarton and Western Mountains, *Gunn;* ascending to 3000 or 4000 ft., *C. Stuart.*

45. **B. parviflora,** *Sm. Tracts*, 295, *t.* 6. A small, glabrous undershrub, forming a thick woody rhizome with numerous prostrate, ascending, or erect branching stems, usually under 6 in., but sometimes nearly 1 ft. long. Leaves all simple, from oblong to linear-lanceolate, rather acute, rarely ½ in. long. Flowers small, terminal, solitary or few in a leafy terminal cyme, on short thickened pedicels, one or two rarely axillary by the abortion of the flowering branch. Sepals acute, 1½ to 2 lines long. Petals not much exceeding them, imbricate, glabrous. Filaments glabrous or slightly hairy and glandular towards the top; anthers very minutely or not at all apiculate. Ovary glabrous; style short and thick. Cocci small. Seeds smooth and shining.—DC. Prod. i. 721; F. Muell. Pl. Vict. i. 113; *B. pilonema*, Labill. Pl. Nov. Holl. i. 98, t. 126; DC. Prod. i. 722; Hook. f. Fl. Tasm. i. 66.

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 299, and others; northward to Hastings river, *Beckler.*

Victoria. Heathy and sandy moors at Port Albert, towards Wilson's Promontory, and near Cape Liptrap, *F. Mueller.*

Tasmania. Port Dalrymple, *R. Brown;* common in heaths and sandy places throughout the island, *J. D. Hooker.*

Some specimens much resemble at first sight some of the smaller forms of *B. polygalifolia*, but a careful examination of the inflorescence will always suffice to distinguish them, independently of the seeds.

46. **B. viminea,** *Lindl. Swan Riv. App.* 17. A small or slender glabrous shrub. Leaves all simple, usually linear-lanceolate or linear-cuneate, flat, in some specimens ½ to 1 in. long, in others all under ½ in. Pedicels mostly axillary but also terminal, 1-flowered, short, thickened under the flower. Sepals ovate or lanceolate, short. Petals attaining 2 to 3 lines, glabrous, imbricate. Filaments densely woolly, glabrous glandular and obtuse

at the top; anthers tipped with a prominent erect or recurved appendage. Style hirsute. Seeds smooth and shining.

W. Australia. Swan River, *Drummond, 1st Coll.* The smaller specimens often much resemble elongated ones of *B. parviflora*, but have a more axillary inflorescence and apiculate anthers.

Var. *latifolia.* Leaves rather shorter, the lower ones broader and cuneate. Flowers rather larger with mucronate petals.—*B. tenuifolia*, Bartl. in Pl. Preiss. i. 168.—Canning river, *Preiss, n.* 2022; S. coast, *Gilbert, n.* 108; Fitzgerald range and E. Mount Barren, *Herb. F. Mueller.*

Var. *gracilis.* Leaves small. Flowers small, mostly axillary.—*Drummond, Coll.* 1848, *n.* 92.

B. colorata, Lehm. in Pl. Preiss. ii. 226; Herb. Preiss. n. 2627, which I have not seen, appears from the description to be referable to *B. viminea.*

47. **B. filifolia,** *F. Muell. Fragm.* i. 3, *and* ii. 177. A low glabrous shrub, with short slender but rigid branches. Leaves either simple and sessile, linear-terete, about ½ in. long, or 3-foliolate with 3 smaller linear-terete leaflets on a distinct common petiole. Peduncles slender, terminal, bearing a single flower, or short with a cyme of 3 flowers on pedicels of 2 or 3 lines thickened under the flower. Sepals small, lanceolate. Petals attaining 2 or 3 lines, glabrous, imbricate. Filaments slightly ciliate, clavate and glandular at the top; anthers not apiculate. Seeds smooth and shining.

S. Australia. Sandy plains near Encounter Bay, *F. Mueller;* Kangaroo Island, *Waterhouse;* Tatiara country, *Woods;* near Adelaide, *Herb. Hooker.*—F. Mueller (Pl. Vict. i. 229) thinks that this may prove to be a variety of *B. pinnata*, a species with which however it appears to me to have very little connection.

48. **B. inornata,** *Turcz. in Bull. Mosc.* 1852, ii. 164. A low, much-branched, rather slender but rigid shrub, usually glabrous and often tuberculate with prominent glands. Leaves usually compound, with a very short common petiole; leaflets 3, 5, or rarely 1, linear-terete, very obtuse, rarely above 3 lines long, and often much shorter. Flowers terminal, solitary or 2 or 3 together on short pedicels. Sepals broad and short, usually ciliate. Petals attaining 2 to 3 lines, nearly glabrous, much imbricate, rather acute but not prominently mucronate. Filaments glabrous, clavate-glandular; anthers apiculate. Stigma capitate in some specimens, minute in others where the anthers are longer. Seeds smooth but not shining.—*B. leptophylla*, Turcz. l. c.; *B. clavellifolia*, F. Muell. in Trans. Phil. Soc. Vict. i. 12; Fragm. i. 99; Pl. Vict. i. 117.

Victoria. Sandy desert towards Lake Albert, *F. Mueller.*

S. Australia. Mallee scrub near the Murray, *F. Mueller.*

W. Australia, *Drummond, 5th Coll. n.* 196 *and* 197; Phillips ranges, Gardiner's River, and Middle Mount Barren, *Herb. F. Mueller.*

49. **B. oxyantha,** *Turcz. in Bull. Mosc.* 1852, ii. 165. Nearly allied to *B. inornata* and with the same habit and foliage, but with the branches minutely hoary-pubescent and not glandular. Leaflets 3 or 5, linear-terete and frequently 3 lines long. Flowers rather larger than in *B. inornata.* Sepals lanceolate, with long subulate points, or almost subulate from the base. Petals distinctly pointed. Filaments densely ciliate; anthers apiculate. Style short, with a small stigma.—*B. brachyphylla*, F. Muell. Fragm. i. 99; ii. 180.

W. Australia, *Drummond, 5th Coll. n.* 198; Fitzgerald ranges, *Herb. F. Mueller.*

SERIES VII. PEDUNCULATÆ.—Anthers uniform. Leaves simple. Peduncles terminal, elongated, usually several-flowered.

50. **B. scabra,** *Lindl. Swan Riv. App.* 17. A much-branched erect shrub of 1 to 1½ ft., roughly pubescent or hirsute with short spreading hairs. Leaves all simple, nearly sessile, linear or oblong, very obtuse, rarely exceeding 4 or 5 lines, the margins much revolute and usually pale underneath. Flowers terminal, solitary or few in shortly pedunculate cymes, or in cyme-like leafy clusters. Sepals with a very short broad base and filiform hispid points. Petals rather narrow, but imbricate, 2 to 3 lines long, finely mucronate. Filaments ciliate, almost capitate and glandular at the top; anthers tipped with a rather large recurved appendage. Style rather thick, glabrous or pubescent. Cocci usually pubescent. Seeds smooth and apparently opaque, but not seen quite ripe.

W. Australia. Swan River, *Drummond*, 1*st Coll.*; *Fraser.* The young leaves are often clustered in the axils, but, as far as I have seen, always simple.

51. **B. thymifolia,** *Turcz. in Bull. Mosc.* 1852, ii. 165. A much-branched, rather slender shrub, glabrous or slightly pubescent with short spreading hairs. Leaves all simple, nearly sessile, linear, obtuse, rarely attaining 4 lines, the margins much revolute. Flowers 1 to 3, on rather long terminal peduncles, or sometimes more numerous, forming a showy corymbose cyme. Sepals broad, shortly acuminate, glabrous or hirsute. Petals attaining about 3 lines, imbricate, glabrous. Filaments slightly ciliate, clavate and glandular at the top; anthers tipped with a prominent recurved white appendage. Style short, pubescent; stigma oblong.—*B. fascicul ifolia*, F. Muell. Fragm. i. 99; ii. 99.

W. Australia, *Drummond*, 5*th Coll. n.* 195, *A. Gregory*; Salt river, Fitzgerald river, etc., *Maxwell.* The species differs from *B. scabra*, chiefly in the long peduncles, short sepals, and in the want of the long points to the petals.

52. **B. ovata,** *Lindl. in Bot. Reg.* 1841, *under n.* 47. A glabrous undershrub or shrub, forming a thick stock and erect dichotomous stems, usually under 1 ft. Leaves almost sessile, cordate-ovate or the upper ones lanceolate, obtuse or acute, under ½ in. long, the margins entire and recurved. Flowers few, in loose terminal pedunculate dichotomous cymes, the branches and pedicels slender. Sepals short, acuminate. Petals attaining about 4 lines, imbricate, glabrous. Filaments glabrous, capitate and glandular at the top; anthers tipped with an obtuse recurved appendage. Style rather thick, glabrous or hairy.

W. Australia. Swan River, *Drummond*, 1*st Coll.*; Darling range, *Collie.*

53. **B. fastigiata,** *Bartl. in Pl. Preiss.* i. 167. A glabrous glaucous shrub or undershrub, with erect and rigid or weak and decumbent branches. Leaves obovate, spathulate or oblong, rarely attaining ½ in., very obtuse, entire or denticulate, narrowed at the base. Flowers in loose umbel-like simple cymes, terminal or in the upper axils, the common peduncle short, with usually 4 to 6 rather long pedicels, thickened upwards. Sepals ovate or ovate-lanceolate, acute, herbaceous and almost valvate. Petals rarely twice as long, attaining about 3 lines. Filaments ciliate, narrowed upwards, slightly glandular; anthers oblong, almost terminal, not apiculate. Cocci truncate. Seeds smooth and shining.

W. Australia, *Drummond, n.* 119; Plantagenet district, *Preiss, n.* 2028; Gordon river, *Oldfield;* S.W. interior, *Maxwell.*

Var. (?) *tenuior.* Leaves thin, almost lanceolate, serrate.—W. Australia, *Gilbert, n.* 3 *and* 18.—Weak drawn-up specimens of this and of *B. viminea* have much general resemblance, although the species generally are widely distinct.

54. **B. denticulata,** *Sm. in Trans. Linn. Soc.* viii. 284. Shrubby, erect, glabrous and somewhat glaucous. Leaves nearly sessile, simple, linear or lanceolate, rarely oblong-cuneate, flat but rather thick, ½ to 1¾ in. long, often bordered by a few small glandular teeth or more distinctly denticulate when broad. Flowers rather large, in loose terminal shortly pedunculate cymes or corymbs, the pedicels thickened upwards. Sepals very acute, usually short but variable. Petals attaining about 3 lines or rather more, imbricate, glabrous. Filaments ciliate and flattened towards the base, terete and glandular upwards, obtuse at the top; anthers short, not apiculate.—DC. Prod. i. 721; Bot. Reg. t. 1000; *B. chironiifolia,* Bartl. in Pl. Preiss. i. 167.

W. Australia. King George's Sound, *R. Brown* and others; and other parts of the southern districts, *Drummond, n.* 22, *Preiss. n.* 2027, *Oldfield,* and others; eastward to Phillips river and E. Mount Barren, *Maxwell.*

55. **B. spathulata,** *Lindl. Swan Riv. App.* 17. A glabrous glaucous undershrub, forming a thick stock, with erect simple or branched stems, ½ to 1½ ft. high, or when very luxuriant attaining 3 ft. Leaves not numerous, from obovate or oblong-spathulate to linear-cuneate or lanceolate, obtuse or rarely acute, ½ to 1 in. or rarely longer, thick, nerveless, quite entire. Flowers few, rather large, in irregular terminal pedunculate cymes. Pedicels glabrous or glandular. Sepals usually very acute. Petals attaining 4 lines or more, imbricate, glabrous. Filaments ciliate; anthers often minutely apiculate.—Bartl. in Pl. Preiss. 167; *B. flexuosa,* Bartl. l. c. i. 166; *B. macra,* Bartl. l. c. 167.

W. Australia. Apparently common from King George's Sound, *R. Brown* and others, to Swan River, *Drummond* and others; Canning river, *Preiss, n.* 2024, 2025; Darling range, *Preiss, n.* 2026; Preston river, *Oldfield.*

Var. *ramosa.* More branched, flowers more numerous, in long pedunculate cymes.—Swan River, *Drummond;* King George's Sound, *Baxter, Collie;* eastward to E. Mount Barren, *Maxwell.*

Var. *elatior.* Tall, with elongated branches, the upper leaves linear and distant, occasionally slightly dilated at the base. Flowers in very loose dichotomous cymes.—*B. dichotoma,* Lindl. Bot. Reg. 1841, under n. 47.—Vasse river, *Mrs. Molloy;* Swan River, *Drummond, Coll.* 1843, *n.* 38.

56. **B. juncea,** *Bartl. in Pl. Preiss.* i. 166. An undershrub, with erect virgate or rush-like stems, glabrous and little branched or dichotomous upwards. Leaves few, linear-terete, rather thick, the lower ones sometimes 1 in. long, the upper ones few, small and distant, and some specimens almost leafless. Flowers small, terminal, solitary or few together, on short glabrous or woolly pedicels. Sepals lanceolate-subulate, nearly as long as the petals. Petals about 2 or rarely 3 lines long, mucronate, imbricate, often slightly pubescent outside along the centre. Filaments glabrous, slightly ciliate, glandular and obtuse; anthers not apiculate. Cocci small, truncate. Seeds smooth and shining.—*B. laniflora,* Bartl. in Pl. Preiss. i. 165 (specimens with woolly calyces).

W. Australia. King George's Sound, *R. Brown* and others; southern districts, *Preiss, n.* 2030, 2036, and 2037. Some specimens from near Tone Bridge, in Herb. F. Mueller are remarkable for their large flowers. In all others they rarely much exceed 2 lines.

57. **B. cymosa,** *Endl. in Hueg. Enum.* 16. A glabrous, often glaucous undershrub or shrub, forming a thick stock with erect virgate branches. Leaves sessile, linear-terete, often crowded towards the upper part of the branches or clustered in the axils, ½ to 1 in. or rather longer, sometimes fewer and more distant, the larger ones rarely flattened with revolute margins but always narrow-linear and quite entire. Flowers rather small, usually numerous and cymose, on long terminal peduncles. Pedicels short. Sepals short and broad. Petals attaining about 3 lines. Filaments ciliate, slightly dilated at the base, terete and glandular upwards; anthers minutely apiculate.—*B. teretifolia*, Lindl. Swan Riv. App. 17; Bartl. in Pl. Preiss. i. 166; F. Muell. Fragm. ii. 101.

W. Australia. Swan River, *Drummond*, 1*st Coll. and* (2*nd Coll.*) *n.* 88, *Preiss, n.* 2023, 2029; Vasse river and Darling Range, *Oldfield.*

3. ACRADENIA, Kipp.

Calyx 5-cleft, rarely 6- or 7-cleft. Petals 5, rarely 6 or 7, imbricate. Disk thick, entire. Stamens 10, rarely 12 or 14, inserted outside the disk; anthers all similar and perfect. Carpels usually 5, united almost to the top, each terminating in a glabrous gland. Styles terminal, united in one filiform style, with a small stigma. Ovules 2 in each carpel, collateral or almost superposed. Cocci 5 or fewer, 2-valved; endocarp and seeds unknown.—Leaves opposite, 3-foliolate. Flowers white, in a terminal trichotomous cyme.

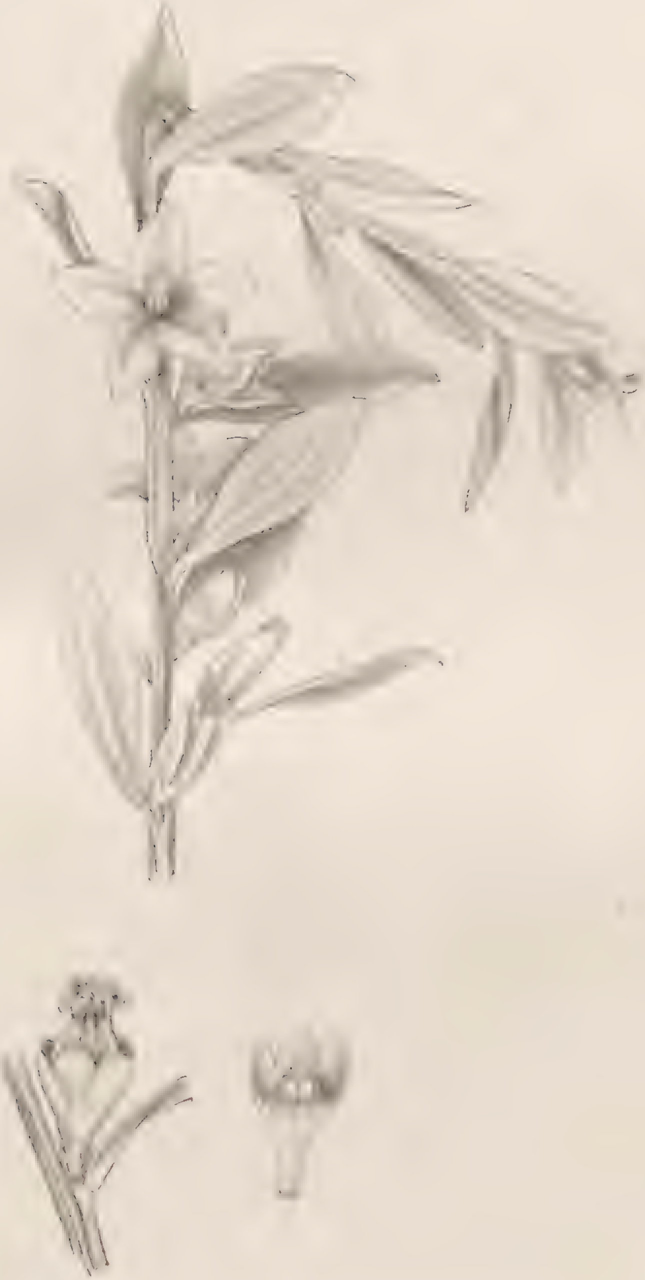
The genus is limited to a single species, endemic in Tasmania. It is evidently nearly allied to *Boronia* and especially to *Zieria*, from which it differs in the flowers, usually 5-merous, with all the stamens perfect and no glands to the disk. The endocarp has been described, on the authority of Kippist, as not separating, but the only fruits known are open and have already shed their seed; and, on comparing them carefully with those of other *Diosmeæ* in a similar state, I cannot but conclude that, as is usual in the tribe, the endocarp has been cast with the seed.

1. **A. Frankliniæ,** *Kipp. in Trans. Linn. Soc.* xxi. 207, *t.* 22. A shrub of 8 to 12 ft., glabrous or the young shoots minutely pubescent. Leaves mostly opposite, 3-foliolate, with a short common petiole; leaflets oblong-lanceolate, obtuse, 1 to 2 in. long, more or less crenately toothed, coriaceous, green on both sides, usually scabrous, with prominent glands. Cymes nearly sessile at the ends of the branches, loosely trichotomous. Sepals distinct, short. Petals 2½ to 3 lines long, pubescent outside. Filaments filiform, glabrous, scarcely shorter than the petals; anthers not apiculate. Ovary very villous, except the small glands terminating each carpel. Cocci hard, truncate, scarcely beaked, transversely wrinkled.—Hook. f. Fl. Tasm. i. 69.

Tasmania. Macquarie Harbour and river, *Milligan.*

4. CROWEA, Sm.

Calyx 5-cleft. Petals 5, imbricate in the bud. Disk annular. Stamens 10, shorter than the petals; filaments flattened, ciliate or woolly; anthers linear, hirsute, tipped with long hirsute appendages. Ovary 5-lobed; styles



inserted above the middle of the carpels, immediately united into one filiform style with a small or globular stigma. Ovules 2, superposed or almost collateral. Cocci 2-valved, rounded or truncate at the top, the endocarp cartilaginous and separating elastically.—Glabrous shrubs or undershrubs. Leaves alternate, simple. Flowers rather large, red purple or green, glabrous, solitary, axillary or terminal.

The genus is confined to Australia. It is united by F. Mueller with *Eriostemon*, from which it differs chiefly in the long hairy appendages of the anthers.

Peduncles terminal or, if axillary, leafy at the base. Branches scarcely angular . . . . 1. *C. exalata.*
Peduncles all axillary, without leafy bracts. Branches very angular or almost winged.
  Leaves quite entire. Style short. Stigma globular . . . . . 2. *C. saligna.*
  Leaves mostly or all denticulate. Style long. Stigma short.
    Branches erect, almost herbaceous. Leaves linear or narrowed at both ends . . . . 3. *C. angustifolia.*
    Rigid shrub. Leaves from broadly cuneate to oblong, truncate or very obtuse . . . . 4. *C. dentata.*

1. **C. exalata,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 11. Shrubby, with the branches more slender than in *C. saligna*, and scarcely angular. Leaves numerous, narrow-linear, mostly obtuse, often all under 1 in. and rarely attaining 1½ in., all entire. Flowers smaller than in *C. saligna*, on short peduncles, almost terminal, or if axillary by the abortion of the flowering branch, the peduncle usually bears 1 or more small leaves at its base. Petals rarely ½ in. long, red or rarely green. Stamens as in *C. saligna*, the petaline filaments shorter than the others. Ovary very short; style very short, with a large globular stigma. Cocci small, free from the base.—*Eriostemon Crowei* (partly), F. Muell. Pl. Vict. i. 119.

N. S. Wales. Paramatta, *Wilson*; Yowaka river, Mount Tambo, etc., near Twofold Bay, *F. Mueller*.

Victoria. Mount Macfarlane, near Omeo, Mitta-Mitta, Livingston and Genoa rivers, and Boggy Creek, towards Lake King, *F. Mueller*.

This plant is now considered by F. Mueller as specifically identical with *C. saligna*, and it may possibly prove to be a variety of that species; but, besides the general habit, foliage, and less angular stems, the inflorescence appears to me to be different in all the specimens I have seen.

2. **C. saligna,** *Andr. Bot. Rep. t.* 79. Shrubby and erect, the branches prominently angular. Leaves mostly lanceolate, narrowed at each end, acute or obtuse, 1 to 2 in. long, of a much thinner consistence than those of *Eriostemon salicifolius*, which this species sometimes resembles, in some specimens passing into a broadly oblong or elliptical-ovate shape, in others almost linear, like those of *C. exalata*. Flowers red, on axillary pedicels shorter than the leaves, thickened upwards, with 2 very minute bracts at their base. Sepals short and broad. Petals 7 to 9 lines long. Appendage of the anthers longer than the cells themselves. Style very short, with a large globular stigma. Cocci short, united to near the top. Seeds reticulate, somewhat shining.—Vent. Jard. Malm. t. 7; Bot. Mag. t. 989; DC. Prod. i. 720; *C. latifolia*, Lodd. in G. Don, Gen. Syst. i. 792; *Eriostemon Crowei* (partly), F. Muell. Pl. Vict. i. 119.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 295 (the names or numbers of this and n. 294, *Eriostemon salicifolius*, interchanged in some collections), and others.

C. latifolia, Paxt. Mag. Bot. xiv. 222, with a fig., is one of the commonest forms of this species. In some specimens from Manly Beach, *Woolls* (*Herb. Muell.*), the leaves are nearly twice as broad. In others from between Richmond river and Raymond Terrace, *A. Ralston* (*Herb. Muell.*), they are linear, elongated, mostly rounded or truncate at the top. Again, in numerous specimens collected by *R. Brown* on the Hawkesbury river, they are linear, but smaller and more crowded, approaching those of *C. exalata;* but in all, the pedicels are axillary and leafless.

3. **C. angustifolia,** *Turcz. in Bull. Mosc.* 1849, ii. 13. Apparently an undershrub with virgate erect branches of 1 to 2 ft., less woody than in other species, acutely angled and almost winged. Leaves sessile, linear, mostly acute, 1 to 2 in. long, entire or minutely serrulate. Flowers red or white, rather smaller than in *C. saligna*, all axillary, solitary or rarely 2 together, on very short pedicels, thickened upwards, with minute bracts at the base. Sepals very short. Petals not exceeding ½ in. Filaments glabrous or slightly ciliate; anthers with longer cells and a shorter, less hairy, and flatter appendage than in *C. saligna*. Style elongated, with a small stigma. Cocci broad, transversely wrinkled.—*Eriostemon Turczaninowii*, F. Muell. Pl. Vict. i. 120.

W. Australia. King George's Sound, *R. Brown;* southern districts, *Drummond* and others.

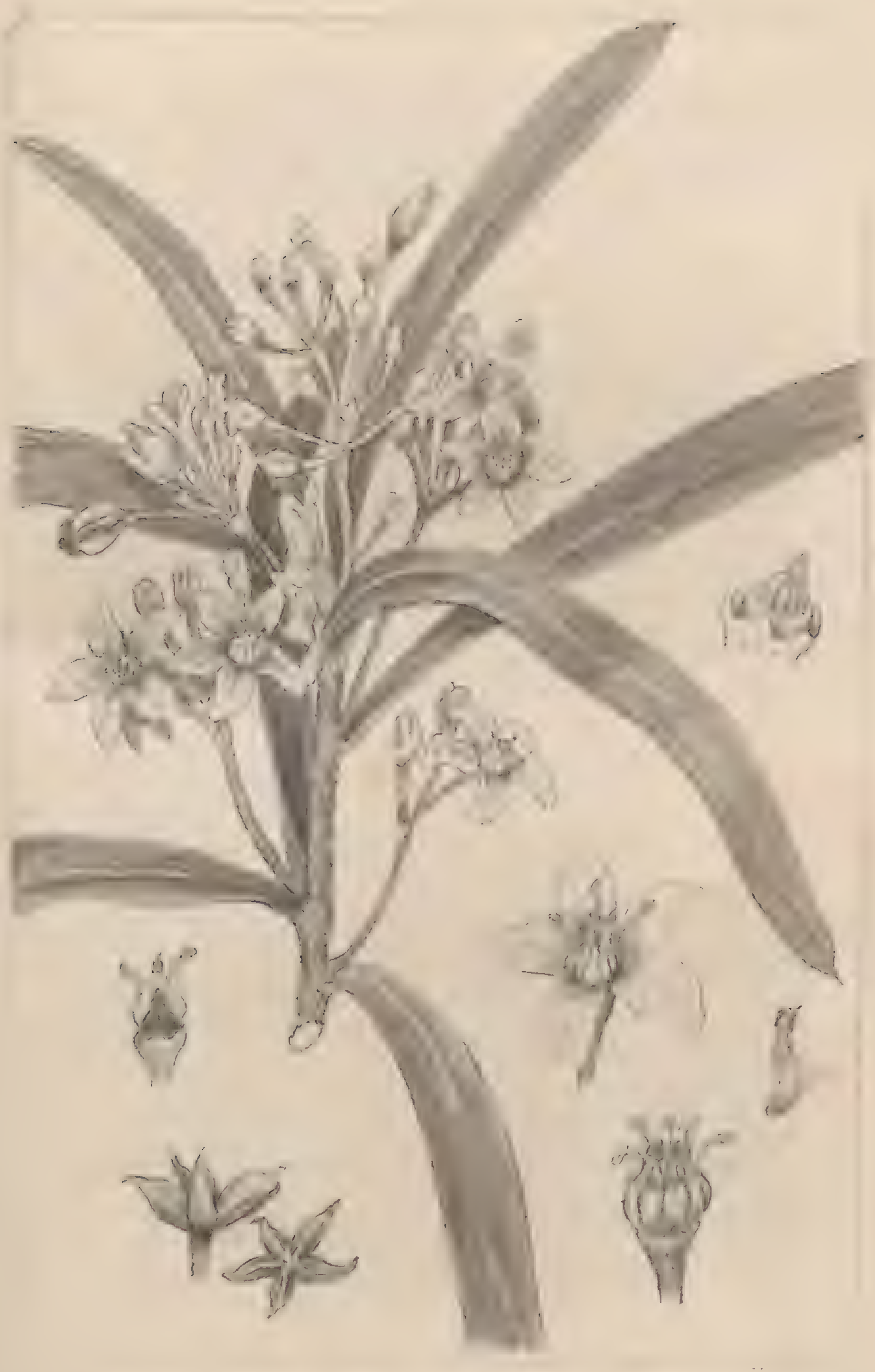
Var. (?) *platyphylla*. Leaves ovate-elliptical, narrowed at each end, minutely and regularly crenate-serrate.—Franklin river, *Maxwell*.

4. **C. dentata,** *R. Br. Herb.* A rigid erect branching shrub, the young branches very angular. Leaves sessile with a broad base, from broadly cuneate and truncate to narrow-oblong, ½ to 1 in. long, strongly and acutely serrate, coriaceous and rigid. Peduncles 1-flowered, axillary, short and thick, slightly hoary as well as the petals. Sepals very short. Petals 4 to 5 lines long. Filaments glabrous or slightly ciliate; anthers with an appendage as long as the cells, very hairy, as in *C. saligna*. Cocci obtuse or obscurely beaked.

W. Australia. King George's Sound, *Baxter* (*Hb. R. Brown*).

5. ERIOSTEMON, Sm.

Calyx 5-cleft or rarely 4-cleft. Petals 5, rarely 4, imbricate. Disk usually more or less thickened. Stamens 10, rarely 8, shorter than the petals; filaments hairy, attenuate or rarely obtuse at the top; anthers usually tipped with a very small point or appendage. Carpels 5, rarely 4 or fewer, distinct from the base (or in one species united to the middle), usually produced into a short appendage above the cells; styles inserted below the middle and immediately united into one; stigma small. Ovules 2 in each cell, superposed. Cocci 2-valved, usually more or less beaked at the top or at the outer angle; the endocarp cartilaginous and separating elastically. Seeds solitary.—Shrubs, either glabrous or slightly pubescent, without scurfy scales. Leaves alternate, simple, entire, the glands often large and prominent. Inflorescence axillary or terminal; peduncles bearing a single flower, or an umbel of few, white pink or rarely blue flowers. Calyx small, with short broad lobes or sepals, except in *E. nodiflorus*.



Eriostemon myoporoides Vol 1 p 33.

Besides the Australian species, which are all endemic, the genus comprises one from New Caledonia. F. Mueller proposes to extend its limits so as to include *Phebalium*, *Microcybe*, *Geleznovia*, *Crowea*, *Philotheca*, *Drummondita*, and *Asterolasia*, which are all no doubt nearly enough related to it to be equally well regarded as sections or as substantive genera; but as the majority of them have been long established and universally adopted, and are distinguished by characters easily recognized, their union into one vast genus seems to me to be scarcely justified.

Inflorescence axillary.
  Filaments clavate and glandular at the top.
    Leaves linear or lanceolate, thick, obscurely 1-nerved. Bracts on the pedicel several, imbricate . . . . 1. *E. salicifolius.*
    Leaves oblong, finely 3-nerved. Bracts on the pedicel 1 to 3, distant . . . . 2. *E. Banksii.*
  Filaments subulate at the top, usually flattened below.
    Flowers 4-merous . . . . 3. *E. virgatus.*
    Flowers 5-merous.
      Leaves oblong or lanceolate, 1 to 3 or 4 in. long, flat, 1-nerved.
        Pedicels slender, 1-flowered. Carpels of the ovary united to above the middle, and not rostrate when ripe . . . 4. *E. trachyphyllus.*
        Pedicels rigid, usually several-flowered. Carpels free from the base, rostrate when ripe . . . . 5. *E. myoporoides.*
      Leaves linear or linear-spathulate, mucronate, with recurved margins and a prominent midrib . . . . 6. *E. hispidulus.*
      Leaves short, cordate-ovate or obovate, the margins thickened or recurved, the midrib prominent . . . . 7. *E. buxifolius.*
      Leaves obovate or spathulate, thick, flat or concave, the midrib faint or none . . . . 8. *E. obovalis.*
      Leaves narrow-linear, convex underneath or terete.
        Filaments flat . . . . 9. *E. scaber.*
        Filaments subulate . . . . 10. *E. linearis.*
Inflorescence terminal, appearing sometimes lateral by the elongation of the side shoots.
  Flowers solitary or rarely 2 or 3 together.
    Leaves small, flat or with recurved margins.
      Leaves not above 2 lines long, thick, warted or crenate with large prominent glands . . . . 11. *E. difformis.*
      Leaves flat, oblong or linear, 3 to 4 lines, crenate, with a prominent midrib . . . . 11. *E. difformis*, var. *Smithianus.*
      Leaves flat, linear-cuneate, 2 to 4 lines, slightly crenate, nerveless . . . . 12. *E. parvifolius.*
    Leaves linear-terete.
      Leaves warted with large glands. Flowers not above 3 lines 11. *E. difformis*, var. *brevifolius.*
      Leaves smooth. Flowers nearly 5 lines . . . . 13. *E. ericifolius.*
  Flowers (usually blue) densely clustered or capitate . . . . . 14. *E. nodiflorus.*
  Flowers (usually pale blue) in loose racemes . . . . 15. *E. spicatus.*

(*Eriostemon dentatus*, Colla, is *Elæocarpus dentatus*, Vahl, a New Zealand plant.)

1. **E. salicifolius,** *Sm.; DC. Prod.* i. 720. An erect shrub, the branches rigid and often angular, glabrous or minutely hoary. Leaves linear or linear-lanceolate, mostly 1 to 2 in. long, rather thick and rigid, glabrous when full-grown, obscurely 1-nerved. Peduncles axillary, short and 1-flowered, with a few broad scale-like imbricate bracts at the base, hoary with a minute tomentum as well as the calyx and petals. Sepals short, orbicular, rigid. Petals

pink, attaining about ½ in. Filaments flattened, densely fringed with woolly hairs, clavate and glandular at the top, bearing the anthers on a short stipes as in *Boronia;* anthers tipped with a very short broad recurved appendage. Ovary glabrous; style slightly pubescent below the middle. Cocci truncate at the top, but not beaked, transversely wrinkled. Seeds smooth and shining. —Rudge, in Trans. Linn. Soc. xi. t. 26; Deless. Ic. Sel. iii. t. 46; Bot. Mag. t. 2854; *E. lanceolatus*, Gærtn. f. Fr. iii. 154, t. 210; *Crowea scabra*, Grah. in Edinb. Phil. Journ. 1827, 174.

N. S. Wales. Port Jackson, . *Brown*, *Sieber*, *n.* 294 (the names or numbers of this and *Crowea saligna*, 295, interchanged in many herbaria), and *Fl. Mixt. n.* 536, and others.

The synonym often quoted of *E. australasia*, Sm., is an error. Smith mentions no species in Trans. Linn. Soc. iv. 221, but in describing the genus gives the station Australasia, which has been mistaken for a specific name.

2. **E. Banksii,** *A. Cunn.; Endl. in Hueg. Enum.* 15. A large shrub, the young branches angular and loosely hairy. Leaves from obovate-oblong to oblong-lanceolate, often oblique, obtuse, 1 to 1½ in. long, contracted into a very short petiole, thinly coriaceous, finely veined and obscurely 3-nerved, glabrous or slightly hairy. Peduncles very short, axillary, 1- or rarely 2-flowered, usually with 2 or 3 scale-like distant bracts. Sepals small, ciliate. Petals attaining about 3 lines, hoary outside, with a prominent midrib. Filaments slightly flattened, woolly outside, clavate and glandular at the top as in *E. salicifolius;* anthers not apiculate. Ovary glabrous, style pubescent. Carpels of the fruit 4 or 5 lines long, truncate, very shortly beaked.

Queensland. Sandy shores of the Endeavour river, *Banks and Solander*, *R. Brown*, *A. Cunningham.* The leaves have very much the aspect of the phyllodia of some *Acacias.*

3. **E. virgatus,** *A. Cunn.; Hook. f. in Hook. Journ. Bot.* ii. 417. An erect, glabrous shrub, with virgate branches. Leaves rather crowded, cuneate-oblong, obtuse, mucronate, mostly about ½ in. long, flat, almost shining above, pale underneath, with a prominent midrib, the tubercular glands small. Pedicels axillary, 1-flowered, shorter than the leaves, but rather slender. Flowers 4-merous. Sepals small. Petals glabrous, 2½ to 3 lines long. Filaments flattened, ciliate, attenuate at the top; anthers minutely apiculate. Cocci glabrous, rostrate.—Hook. f. Fl. Tasm. i. 64.

Tasmania. Rocky shores of Macquarie Harbour, *A. Cunningham;* Rocky Cape, *Gunn;* hills on Huon river, *Oldfield.* This is the only species with 4-merous flowers, and appears to be constantly so. *Phebalium Oldfieldi*, F. Muell., referred to it in Hook f. Fl. Tasm. ii. 358, from specimens in leaf only, is very different in inflorescence and flowers, and even the leaves differ in being never mucronate.

4. **E. trachyphyllus,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 99, *and Pl. Vict.* i. 121. A tall glabrous shrub, with prominent tubercular glands. Leaves from cuneate-oblong to narrow-lanceolate, shortly mucronate, 1 to 2 in. long, much narrowed at the base, flat or the margins slightly recurved, the midrib prominent underneath. Pedicels axillary, 1-flowered, slender, but shorter than the leaves. Petals white, glabrous, about 3 lines long. Filaments somewhat flattened, ciliate, attenuate at the top; anthers minutely apiculate. Ovary glabrous, the carpels united to ¾ of their height but

deeply depressed in the centre, the style attached below the middle. Capsule obtuse, 5-angled, the carpels not rostrate, separating at length to below the middle. Seeds smooth and shining.

N. S. Wales. Forest gullies near Twofold Bay, and about the sources of the Yowaka river, *F. Mueller.*

Victoria. Rocky declivities on Snowy River, near Pinch river, *F. Mueller.*

This species differs from all others in the united carpels of the ovary; but the habit, æstivation of the petals, stamens, and other characters, are those of *Eriostemon;* and even the ovary is different in shape from that of *Asterolasia* and other genera where the carpels are more or less united.

Var. (?) *Leichhardtii.* Foliage of the typical form. Flowers much larger; filaments much dilated and shortly ciliate to the middle, fringed with long hairs in the upper part; anthers larger; lobes of the ovary produced into long appendages, and carpels therefore probably beaked.—"From Brroa" (N. S. Wales?), *Leichhardt.*

5. **E. myoporoides,** *DC. Prod.* i. 720. A stout, usually tall, glabrous shrub, with the habit of a *Myoporum*, the glandular tubercles sometimes very prominent, sometimes almost inconspicuous. Leaves sessile, from obovate-oblong to lanceolate or linear-lanceolate, obtuse or rarely acute, always mucronate, 1 to 3 or rarely above 4 in. long, rather firm and sometimes coriaceous, flat with the midrib prominent underneath. Peduncles shorter than the leaves, usually bearing an umbel of 3 to 9 flowers, very rarely reduced to 1 or 2, especially on the smaller-leaved branches. Flowers white or pink, rather large, the petals attaining about 4 lines. Filaments flat, more or less ciliate, attenuate at the top. Ovary glabrous. Cocci beaked.—Bot. Mag. t. 3180; Deless. Ic. Sel. iii. t. 47; F. Muell. Pl. Vict. i. 122; *E. cuspidatus*, A. Cunn. in Field, N. S. Wales, 331; *E. neriifolius*, Sieb. in Spreng. Syst. Cur. Post. 164; *E. lancifolius*, F. Muell. in Trans. Vict. Inst. i. 32.

Queensland. Glasshouse Mountains, *F. Mueller.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 306, *A. Cunningham,* and others; northward to New England, *Herb. Mueller;* in the interior to Lachlan river, *A. Cunningham.*

Victoria. Upper valleys of the Mitta-Mitta river, mounts Hotham, Latrobe, Tambo, and Macfarlane, *F. Mueller.*

Var. *minor.* Leaves rarely much above 1 inch long, peduncles mostly 1- or 2-flowered.—*E. intermedius*, Hook. Bot. Mag. t. 4139. To this form belong the Queensland and Lachlan river specimens. I cannot, however, see in them any near approach to *E. buxifolius.*

6. **E. hispidulus,** *Sieb. in Spreng. Syst. Cur. Post.* 164. Shrubby, with elongated branches, more or less pubescent. Leaves sessile, linear or linear-spathulate, mucronate with a straight or recurved point, ½ to 1 in. long, the margins revolute, usually pubescent especially underneath, rarely glabrous, often tuberculate with prominent glands. Peduncles axillary, shorter than the leaves, 1- or rarely 2-flowered, the pedicel thickened under the flower. Petals attaining 3 or 4 lines. Stamens, style, and fruit of *E. buxifolius.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 305, *A. Cunningham,* and others. F. Mueller considers this as a variety of *E. buxifolius.* The foliage appears to me, however, to be constantly distinct.

7. **E. buxifolius,** *Sm.; DC. Prod.* i. 720. Shrubby, with rigid pubescent branches. Leaves sessile, small, cordate-ovate or obovate, usually mucronate, under ½ in. long, thick and usually tuberculate with prominent glands, the margins thickened or recurved, the midrib prominent underneath.

Peduncles short, axillary, 1- or very rarely 2-flowered with very minute bracts below the middle or at the base, thickened upwards. Petals broadly oblong, attaining 4 or 5 lines. Filaments flattened, slightly ciliate, the longer ones or all attenuate and glabrous at the top; anthers minutely apiculate. Carpels much elongated above the cells; style glabrous. Cocci ovate, beaked on the upper outer edge.—Deless. Ic. Sel. iii. t. 45; Bot. Mag. t. 4101.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber, n.* 304, and others. This species seems occasionally almost to run into *E. obovalis* in the shape of its leaves, but is then always known by the recurved margins and prominent midrib.

8. **E. obovalis,** *A. Cunn. in Field, N. S. Wales,* 331. A glabrous shrub of 2 to 3 ft. Leaves obcordate, obovate or oblong-spathulate, very obtuse or truncate, rarely attaining ½ in., much narrowed at the base and often petiolate, thick but flat or concave above, the midrib little conspicuous, usually strongly tuberculate with prominent glands. Pedicels axillary, 1-flowered, short and thickened upwards. Flowers rather smaller than in *E. buxifolius.* Petals glabrous, attaining 3 or 4 lines. Filaments flattened, ciliate. Cocci beaked, at least when young (not seen ripe).—*E. verrucosus*, A. Rich. Sert. Astrol. 74, t. 26; Hook. f. Fl. Tasm. i. 64; F. Muell. Pl. Vict. i. 123; *E. obcordatus*, A. Cunn. in Hook. Journ. Bot. i. 254; Hook. Ic. Pl. t. 60.

N. S. Wales. Verge of Regent's Glen, Blue Mountains, *A. Cunningham;* Bluff's Head, *Caley.*

Victoria. Barren ranges and forest land, not common, *F. Mueller.*

Tasmania. Derwent river, *R. Brown;* common in gravelly and sandy soil throughout the island, *J. D. Hooker.*

A. Richard gives Moreton Bay as the station of his plant, but that is probably owing to some mistake of Lesson's in labelling the plants received from Fraser. In A. Cunningham's diagnosis the flowers are said to be terminal, but I find them always axillary in his specimens, although sometimes proceeding from the upper axils so as to appear terminal without close examination.

9. **E. scaber,** *Paxt. Mag. Bot.* xiii. 127, *with a figure.* A shrub, with the general aspect of *E. hispidulus*, but with glabrous or very minutely pubescent branches. Leaves sessile, narrow-linear, acute and mucronulate, under 1 in. long, thick and very convex underneath, flat or channelled above and often almost terete, the margins never revolute, more or less tuberculate with prominent glands. Inflorescence and flowers of *E. obovalis.* Carpels much compressed, prominently rostrate.

Queensland. Glasshouse Mountains, *F. Mueller.*

N. S. Wales. St. George's river, *R. Brown;* Paramatta, *Woolls;* Port Jackson, *Caley;* near Liverpool, *Leichhardt.*

This is considered by F. Mueller as a variety of *E. buxifolius.* It appears to me to be nearer to *E. obovalis*, and differs from both chiefly in foliage.

10. **E. linearis,** *A. Cunn.; Endl. in Hueg. Enum.* 16. A rigid heath-like shrub, quite glabrous or the branches minutely pubescent. Leaves sessile, linear-terete, obtuse or scarcely mucronate, sometimes all under ½ in., but attaining ¾ in. when very luxuriant, more or less tuberculate with prominent glands. Pedicels short, axillary, 1-flowered. Flowers white or pink. Petals glabrous, attaining 2½ or scarcely 3 lines. Filaments filiform, very hairy; anthers minutely apiculate. Ovary glabrous; stigma slightly dilated and lobed. Cocci glabrous, beaked.—*E. halmaturorum*, F. Muell. in Linnæa, xxv. 376.

N. S. Wales. Mount Boyne, *Fraser*; Goulburn and Peel ranges, *A. Cunningham*; Mount Murchison and Ebers ranges, *F. Mueller.* United by F. Mueller with *E. difformis*; it differs in the inflorescence, which is that of the last 3 species, from which it is distinguished by the filaments quite filiform or scarcely perceptibly flattened. The leaves are more slender than in either species.

11. **E. difformis,** *A. Cunn.*; *Endl. in Hueg. Enum.* 15. A much-branched compact shrub, glabrous or the younger branches minutely pubescent. Leaves in the normal form small, numerous, obovate, oblong, or almost rhomboidal, very obtuse, rarely above 2 lines long, usually tuberculate or as it were crenate, with 2 or 3 very large prominent glands, thick and convex, the margins often recurved, glabrous on both sides. Flowers small, terminal, solitary or 2 or 3 together, on very short pedicels. Calyx very small. Petals 2 to nearly 3 lines long, usually pubescent outside. Filaments flattened, densely ciliate; anthers shortly apiculate. Ovary villous; style short. Cocci very shortly beaked.—F. Muell. Pl. Vict. i. 123; *E. rhombeus*, Lindl. in Mitch. Trop. Austr. 293.

Queensland. Mantua downs, *Mitchell*; between Mackenzie and Dawson rivers, *F. Mueller*; near Warwick, *Beckler*; near Broad Sound, *Herb. Mueller.*
N. S. Wales. Lachlan river, *A. Cunningham.*
Victoria. Murray river and Grampian Mountains, *F. Mueller.*
W. Australia. *Drummond, n.* 55.

Var. (?) *Smithianus.* Quite glabrous. Leaves flat, thin, oblong or linear, glandular crenate, 3 to 4 lines long, with a conspicuous midrib. Petals usually glabrous.—*E. Smithianus*, Hill, in Herb. Muell.

Queensland. Wide Bay, *W. Hill*; near Brisbane, *Henne.*
N. S. Wales. Macleay river, *Beckler.*

Var. (?) *teretifolius.* Glabrous or pubescent. Leaves linear-terete, more or less crenate or tuberculate, with large prominent glands, usually short and crowded, but sometimes 3 or nearly 4 lines long. Petals glabrous. Ovary glabrous or pubescent.—*E. brevifolius*, A. Cunn.; Endl. in Hueg. Enum. 16.

N. S. Wales. Peel's range, *A. Cunningham.*
S. Australia. Lynedoch valley, *Behr.*; Lofty Range and near Gawler river, *F. Mueller.*
W. Australia, *Drummond, 5th Coll. n.* 204 (with rather larger flowers). Phillips and Fitzgerald rivers, *Maxwell.*

Endlicher describes the leaves of Cunningham's plant as revolute and pubescent underneath, which I do not find in any of his specimens. This and the last variety appear in our herbaria so distinct in foliage from the ordinary form of *E. difformis*, that I should have admitted them as substantive species, had it not been for the authority of F. Mueller, who observes that they pass much one into the other.

12. **E. parvifolius,** *R. Br. Herb.* A low, erect, compact, much-branched, glabrous shrub. Leaves crowded, linear-cuneate, obtuse, 3 to 4 lines long, slightly glandular-crenate, flat, coriaceous, without any conspicuous midrib. Flowers small, terminal, solitary, shortly pedicellate, glabrous. Sepals small. Petals 2 to 2½ lines long. Filaments flattened, ciliate; anthers minutely apiculate. Cocci short, truncate, obscurely beaked. Seeds minutely tuberculate.

Queensland. Shoalwater Bay, *R. Brown* (*Herb. R. Br.*).

13. **E. ericifolius,** *A. Cunn. Herb.* An erect, heath-like, glabrous shrub. Leaves crowded, linear-terete, obtuse or nearly so, much longer than in *E. difformis*, although rarely exceeding ½ in., slightly glandular but not tuberculate. Flowers terminal, solitary or 2 or 3 together on short pedicels, sometimes apparently lateral by the elongation of the side shoot. Sepals

broad-lanceolate. Petals attaining 5 lines, glabrous or ciliate, with a prominent midrib. Filaments flattened, woolly-ciliate on the edges, attenuate at the top, the longer ones bearing a long tuft of rigid hairs behind the anthers; anthers shortly apiculate. Ovary very hairy. Carpels of the fruit beaked.

N. S. Wales. Skirts of Liverpool plains, *A. Cunningham.* This species has the foliage nearly of *E. nodiflorus*, but larger usually solitary flowers, and is remarkable for the long hairs covering the anthers.

14. **E. nodiflorus,** *Lindl. Swan Riv. App.* 17. A heath-like shrub, with virgate branches, glabrous or slightly pubescent. Leaves narrow-linear or almost terete, acute or rather obtuse, under $\frac{1}{2}$ in. long, glabrous, the glands not tubercular. Flowers usually blue, several together in dense terminal heads, which become lateral by the elongation of one or more side shoots. Pedicels short. Sepals linear-lanceolate, nearly glabrous or hirsute, often more than half as long as the petals. Petals attaining $2\frac{1}{2}$ to $3\frac{1}{2}$ lines. Filaments slightly flattened, ciliate, attenuate at the top; anthers scarcely apiculate. Ovary glabrous. Cocci acutely beaked.—Bartl. in Pl. Preiss. i. 171.

W. Australia. King George's Sound to Swan River, *Drummond*, 1*st Coll.*, 4*th Coll. n.* 95, 5*th Coll. n.* 203, *Preiss, n.* 2019; Mount Barker and Kalgan river, *Oldfield;* W. Mount Barren, *Maxwell.*

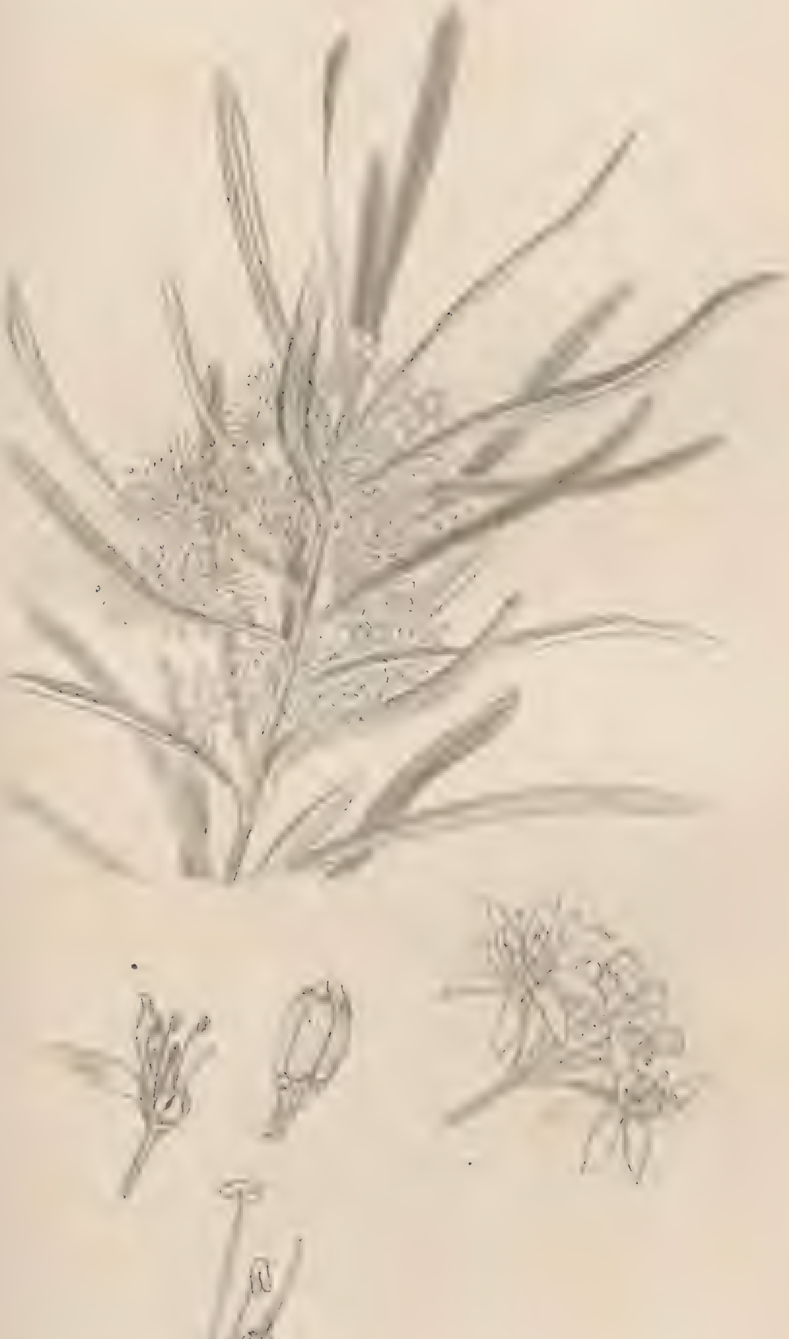
There are two principal forms which at first sight look very distinct, one with small flowers and very villous calyces, the other with larger almost glabrous flowers, but they are connected by so many intermediates that they cannot be well defined even as varieties. *E. calycinus*, Turcz. in Bull. Mosc. 1849, ii. 14, founded on Drummond's specimens, n. 93 of the 4th Coll., appears to be the same species, although the petals in the dried state show nothing of the blue tinge. I can find no other difference.

15. **E. spicatus,** *A. Rich. Sert. Astrol.* 76, *t.* 27. A heath-like shrub or undershrub of 1 or 2 ft., with virgate erect branches, glabrous or slightly pubescent. Leaves erect or spreading, very narrow-linear or almost terete, rarely much exceeding $\frac{1}{2}$ in. Flowers blue according to most collectors, pink according to Oldfield (in Herb. Muell.), generally drying pale-blue or almost white, in loose terminal usually pubescent racemes of 1 to 3 in., with a leafy bract of $\frac{1}{2}$ to $1\frac{1}{2}$ lines at the base of each pedicel at a very early stage, but these bracts fall off usually long before the raceme is fully developed, and are only very rarely persistent till after the first flowers open. Sepals small. Petals rather broad, about 3 lines long. Filaments flattened, densely ciliate, attenuate at the top; anthers shortly apiculate. Ovary glabrous. Carpels of the fruit slightly beaked.—Bartl. in Pl. Preiss. i. 171.—*E. racemosus* and *E. ebracteatus*, Endl. in Hueg. Enum. 15; *E. effusus*, Turcz. in Bull. Mosc. 1849, ii. 14.

W. Australia. From King George's Sound to Swan River, *Drummond, Preiss, n.* 2021, *Harvey*, and others. I have not seen Gilbert's specimens n. 95, described by Turczaninow, but refer them to this species from the character given.

6. PHEBALIUM, A. Juss.

Calyx small, 5-cleft or 5-toothed. Petals 5, valvate or laterally imbricate, but always with valvate inflexed tips. Disk narrow or angular. Stamens 10, shorter or longer than the petals; filaments glabrous or rarely slightly ciliate, filiform or rarely flat, subulate at the top; anthers tipped with a small gland or not at all apiculate. Carpels 5, rarely 4 or fewer, distinct from the



base or nearly so, usually produced into a short or long appendage above the cells; styles inserted below the middle and immediately united into one; stigma small; ovules 2 in each cell, superposed. Cocci 2-valved, usually more or less beaked at the top or the outer angle; the endocarp cartilaginous and separating elastically. Seeds usually solitary.—Shrubs either glabrous or slightly stellate-pubescent or clothed with scurfy scales, very rarely hirsute. Leaves alternate, simple, entire or slightly toothed, the glands often large and prominent. Inflorescence axillary or terminal, peduncles rarely 1-flowered, usually forming an umbel-like short raceme, rarely reduced to a compact head. Flowers small, white or yellow, very rarely and exceptionally 4-merous or 6-merous.

Besides the Australian species, which are all endemic, the genus comprises one from New Zealand, nearly allied to, but apparently distinct from one of the Australian ones. F. Mueller unites the genus with *Eriostemon*, but the æstivation of the corolla, besides the habit and a number of smaller characters, appear to me sufficient to warrant the maintaining it as distinct. Practically, the section *Leionema* may be at once distinguished from *Eriostemon* by the strictly valvate corolla, and *Phebalium* proper by the scurfy scales always present at least on the flower and ovary.

Sect. 1. **Leionema,** F. Muell.—*Glabrous or pubescent plants without scurfy scales. Petals strictly valvate, glabrous.*

Flowers axillary.
Peduncles short, 1-flowered. Stamens not exserted.
Leaves flat, linear or linear-lanceolate, rigid, pungent . . . 1. *P. pungens.*
Leaves linear-terete, obtuse, channelled above . . . . . . 2. *P. montanum.*
Leaves linear, obtuse, the margins revolute . . . . 3. *P. lachnoides.*
Peduncles several-flowered. Stamens slightly exserted.
Leaves linear, with revolute margins, crowded, not exceeding ½ in. Peduncles short, few-flowered. Ovary tomentose . 4. *P. phylicifolium.*
Leaves linear, 1 to 3 in. Peduncles several-flowered. Ovary glabrous . . . . 5. *P. dentatum.*
Flowers terminal. Stamens usually exserted.
Leaves flat or nearly so. Flowers umbellate.
Leaves truncate, notched or 2-lobed at the top.
Umbels pedunculate and reflexed. Petals erect . . . . 6. *P. Ralstoni.*
Umbels erect, nearly sessile . . . . 7. *P. bilobum.*
Leaves acute or obtuse.
Leaves oblong or lanceolate.
Leaves acute, under ½ in. long . . . . 8. *P. lamprophyllum.*
Leaves obtuse, ½ to ¾ in., thinly coriaceous . . . . 9. *P. elatius.*
Leaves crowded, under ½ in., coriaceous, very obtuse, the margins recurved . . . . 10. *P. Oldfieldii.*
Leaves small, obovate or orbicular.
Leaves rigid but not thick, flat or concave . . . . . 11. *P. rotundifolium.*
Leaves very small, thick, convex . . . . 12. *P. brachyphyllum.*
Leaves linear, with closely revolute margins. Flowers capitate . 13. *P. diosmeum.*

Sect. 2. **Euphebalium.**—*The whole plant or at least the inflorescence and calyx, and often the petals and ovary, more or less covered with scurfy peltate scales, often fringed at the edge, those of the ovary often closely imbricate in one mass. Petals laterally imbricate or rarely almost valvate in the bud, with inflexed valvate tips.*

Umbels terminal. Leaves small or rarely exceeding 1 in.
Calyx truncate or very shortly toothed. (Eastern species.)
Leaves obovate with recurved margins, coriaceous, shining above, scaly underneath . . . . 14. *P. ozothamnoides.*

Leaves very small, obcordate or broadly cordate, silvery-scaly 15. *P. obcordatum.*
Leaves linear-cuneate, truncate or emarginate . . . . . . 16. *P. glandulosum.*
Leaves oblong or linear, rounded or obtuse at the top, ½ to 1½ in. long . . . . 17. *P. squamulosum.*
Calyx-teeth as long as the tube. (Western species.)
Leaves narrow-linear, channelled above, keeled underneath, very glandular . . . . 18. *P. tuberculosum.*
Leaves small, oblong, with revolute margins, coriaceous, shining above . . . . 19. *P. microphyllum.*
Leaves small, oblong, flat, silvery underneath . . . . . 20. *P. Drummondii.*
Leaves linear-filiform, hoary-scaly . . . . 21. *P. filifolium.*
Umbels terminal and lateral, loose. Leaves oblong or lanceolate or linear, 1 to 2 in. long or more.
Leaves silvery-white underneath. Petals distinctly imbricate, not scaly . . . . 22. *P. Billardieri.*
Leaves green on both sides when full-grown. Petals valvate or nearly so, densely scaly . . . . 23. *P. argenteum.*
Peduncles all axillary, short, 1- to 3-flowered. Leaves small.
Leaves ovate, white underneath . . . . 24. *P. ovatifolium.*
Leaves obcordate or broadly cuneate, truncate or 2-lobed . . 25. *P. rude.*
Leaves linear-cuneate, thick, notched or 2-lobed.
Flowers distinctly pedicellate, about 2 lines long. Leaves slightly 2-lobed . . . . 26. *P. amblycarpum.*
Flowers almost sessile, 4 or 5 lines long. Leaves divaricately 2-lobed . . . . 27. *P. Baxteri.*

SECT. 1. LEIONEMA.—Glabrous or pubescent plants without scurfy scales. Petals strictly valvate, glabrous.

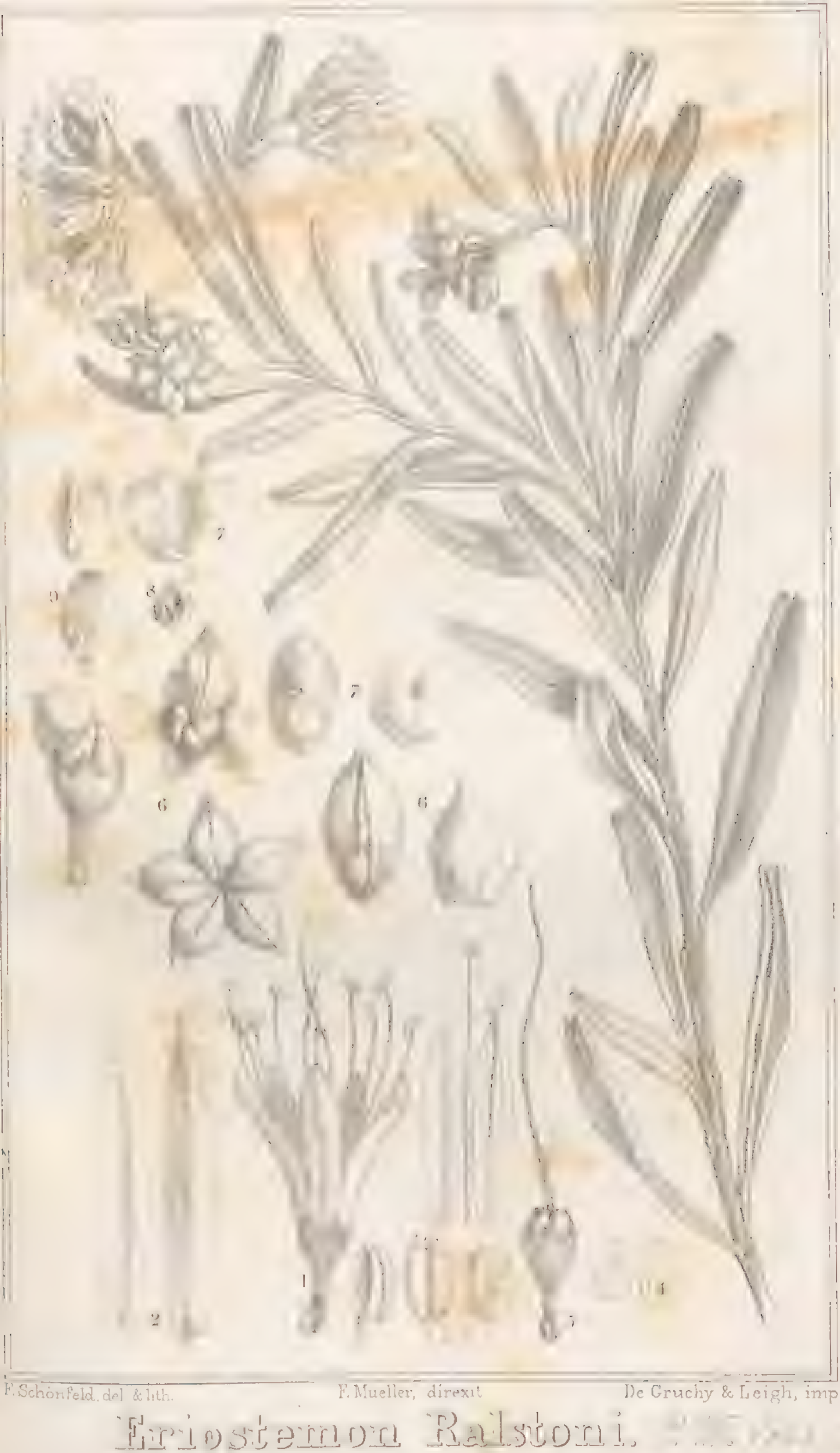
1. **P. pungens,** *Benth.* A small rigid, erect or diffuse shrub, with the aspect of some Epacrideous plants, glabrous or the branches slightly hairy. Leaves linear or linear-lanceolate, rigid, with a strong pungent point, usually ½ in. long or shorter, rarely nearly ¾ in., flat, with the midrib prominent underneath. Peduncles short, axillary, 1-flowered. Flowers white, glabrous. Calyx small. Petals rather more than 2 lines long, valvate. Stamens shorter than the petals; filaments glabrous or slightly ciliate, somewhat flattened, obtusely contracted at the top into a short stipes; anthers not apiculate. Ovary glabrous. Cocci beaked.—*Eriostemon pungens,* Lindl. in Mitch. Three Exped. ii. 156; F. Muell. Pl. Vict. i. 125.

Victoria. Near Mount Hope, *Mitchell;* Murray river and its lower tributaries and Grampian Mountains, *F. Mueller.*
S. Australia. Towards Mount Lofty and Glen Osmond, *F. Mueller.*

2. **P. montanum,** *Hook. Journ. Bot.* i. 255, *and Ic. Pl. t.* 59. A dwarf, rigid, diffuse or prostrate shrub, glabrous or the branches very minutely stellate-pubescent. Leaves crowded, linear, obtuse, rarely above ½ in. long, thick and nearly terete or very convex underneath and channelled above. Flowers in the upper axils on very short thick pedicels. Sepals very short. Petals about 2 lines long, valvate, glabrous. Stamens not exserted. Filaments glabrous, filiform or slightly flattened. Ovary glabrous, with short, oblong, terminal appendages to the carpels; style glabrous. Cocci very minutely beaked.—Hook. f. Fl. Tasm. i. 63.

Tasmania. Highest part of the Western Mountains, Arthur's Lake, etc., at an elevation of 3500 to 4500 ft., *Gunn.*

Tab. XIV.



F. Schönfeld, del & lith. F. Mueller, direxit De Gruchy & Leigh, imp

Eriostemon Ralstoni.

[illegible]

3. **P. lachnoides,** *A. Cunn. in Field, N.S. Wales*, 332. A tall heath-like shrub, glabrous or the branches minutely stellate-pubescent. Leaves crowded, narrow-linear, obtuse or scarcely mucronate, rarely exceeding ½ in., the margins revolute, glabrous above, hoary underneath. Flowers on short axillary pedicels, usually crowded near the ends of the branches. Calyx very short. Petals 2 to 2½ lines long, glabrous, valvate. Stamens not exserted; filaments filiform, glabrous; anthers not apiculate. Ovary glabrous, with long terminal appendages to the carpels. Style glabrous.

N. S. Wales. Barren rocky situations in the Blue Mountains, *A. Cunningham.*

4. **P. phylicifolium,** *F. Muell. in Trans. Vict. Inst.* i. 32. A dwarf, robust, diffuse shrub, glabrous or the branches and under side of the leaves minutely stellate-pubescent. Leaves crowded, linear, obtuse, under ½ in. long, the margins revolute. Flowers pale-yellow, usually 2 or 3 together in shortly pedunculate umbels, all axillary but crowded towards the summit of the branches. Calyx very short. Petals about 2 lines long, valvate. Stamens exserted; filaments filiform, glabrous; anthers not apiculate. Ovary pubescent, the terminal appendages of the carpels short and obtuse; style glabrous. Cocci glabrous, ovate, minutely beaked.—*Eriostemon phylicifolius*, F. Muell. Fragm. i. 105.

Victoria. Summits of the Munyang, Cobberas, Mitta-Mitta, and other mountains, at an elevation of 4000 to 6000 ft., *F. Mueller.* In Pl. Vict. i. 128, F. Mueller unites this with *P. dentatum* as an alpine variety; but, without having seen any intermediate specimens, I do not feel justified in combining two forms so different in habit and foliage, as well as in some minor characters.

5. **P. dentatum,** *Sm. in Rees, Cycl.* xxvii. A tall shrub with elongated branches, hoary when young with a minute stellate pubescence. Leaves linear, obtuse, mostly 1½ to 3 in. long, the margins recurved and often minutely and remotely glandular-toothed, rather coriaceous, glabrous and smooth above, hoary underneath with a stellate tomentum, the midrib prominent. Flowers in short umbel-like racemes, axillary and pedunculate, but always much shorter than the leaves. Pedicels almost glabrous, 2 to 3 lines long. Calyx very small. Petals about 2 lines long, valvate. Longer stamens slightly exserted; filaments filiform, glabrous. Disk very small. Ovary glabrous. Cocci nearly orbicular, shortly beaked. Seeds black and shining.—*P. salicifolium*, A. Juss. in Mem. Soc. Nat. Hist. Par. ii. 134, t. 12; *Eriostemon umbellatus*, Turcz. in Bull. Mosc. 1849, ii. 15; F. Muell. Fragm. i. 104.

N. S. Wales. Port Jackson, *R. Brown* and others.

6. **P. Ralstoni,** *Benth.* A tall shrub, perfectly glabrous, the young branches angular. Leaves narrow-oblong or linear, obtuse and notched or 2-lobed at the end, 1 to 1½ in. long, the margins recurved and entire, narrowed into a short petiole, of a rather firm consistence, pale underneath. Flowers green or reddish, 3 to 5 in a terminal shortly pedunculate reflexed umbel. Calyx small. Petals narrow, valvate, fully 3 lines long, less open than in any other species. Stamens much exserted; filaments subulate, glabrous. Ovary glabrous, on a very short broad disk. Cocci short and broad, with a very short obtuse beak. Seeds smooth.—*Eriostemon Ralstoni*, F. Muell. Fragm. ii. 101, t. 14.

N. S. Wales. Yokawa river, near Twofold Bay, *F. Mueller;* foot of Castle Rock Mountain, *Leichhardt.*

7. **P. bilobum,** *Lindl. in Mitch. Three Exped.* ii. 178. An elegant usually divaricately branched shrub, sometimes tall and erect in wet valleys, glabrous or the young branches minutely stellate-pubescent. Leaves sessile or nearly so, oblong or lanceolate, sometimes all under ½ in., sometimes 1 in. long or even more, truncate or 2-lobed at the top, the margins often serrate and recurved or revolute, rounded, narrowed or rarely cordate at the base, smooth and often shining on both sides, the midrib prominent underneath. Flowers small, in terminal erect sessile umbels, often on short lateral branches, rarely apparently axillary by the abortion of the branch. Pedicels slender, 1 to 3 lines long. Stamens shortly exserted; filaments filiform. Disk small. Ovary glabrous, of 2 or 3, rarely 4, carpels. Cocci oval-oblong, beaked.—*P. truncatum,* Hook. f. Fl. Tasm. i. 64, t. 9; *Eriostemon serrulatus,* F. Muell. Fragm. i. 4; *E. Hildebrandi,* F. Muell. in Trans. Phil. Soc. Vict. i. 10, and Pl. Vict. i. 127; Dietr. Fl. Univ. N. Ser. ii. t. 2.

Victoria. Mount William, *Mitchell;* Cataracts and rocky rivulets in the Victoria ranges and Grampians, *F. Mueller.*

Tasmania. Flinders Island, Bass's Straits, and Schouten Island, E. coast, *Gunn;* Mount Gog, *Archer.*

S. Australia. Mount Lofty, *Whittaker;* sources of the Gawler river, *F. Mueller.*

In Mitchell's specimens, the leaves are broad and cordate at the base; in others, from the same locality, they are rounded or narrowed at the base, as in the generality of the Tasmanian ones. The Mount Lofty specimens are small, divaricate, with short cordate leaves, as figured by Dietrich. The pistil is usually 3-merous in Victoria, more frequently 2-merous in Tasmania, but variable in both.

8. **P. lamprophyllum,** *Benth.* A densely branched glabrous shrub. Leaves crowded, oblong-lanceolate, acute, under ½ in. long, entire, coriaceous and shining, flat or concave, contracted into a very short petiole. Flowers few, in terminal sessile umbels, with a small but usually leafy bract at the base of each pedicel. Calyx small. Petals and stamens not seen. Carpels 5, of which 2 or 3 only ripen, ovate, beaked, glabrous. Seeds smooth and shining.—*Eriostemon lamprophyllus,* F. Muell. Pl. Vict. i. 126.

Victoria. Summit of Mount Ligar, towards the sources of Macalister river, *F. Mueller.*

9. **P. elatius,** *Benth.* A tall shrub, glabrous or the branches very minutely pubescent, and usually tuberculate with prominent glands. Leaves linear-cuneate or oblong, obtuse, ½ to ¾ in. long, entire or crenulate, thinly coriaceous, smooth and shining, narrowed into a very short petiole. Peduncles 2- or more-flowered, terminal or in the uppermost axils, forming short terminal leafy corymbs or ovate panicles. Calyx very small. Petals valvate, not 2 lines long. Stamens exserted; filaments subulate, glabrous; anthers small. Ovary glabrous, on a raised almost stalk-like disk. Cocci obliquely obovate, very minutely beaked.—*Eriostemon elatior,* F. Muell. Fragm. i. 181.

N. S. Wales. New England, near Tenterfield, *C. Stuart.* The species is very closely allied to the New Zealand *P. nudum,* Hook., differing chiefly in much smaller flowers, the calyx-lobes less prominent, the inflorescence not so flat-topped, etc.

10. **P. Oldfieldii,** *F. Muell. Herb.* A densely branched shrub, quite glabrous or the branches pubescent. Leaves narrow-oblong or slightly

cuneate, very obtuse or retuse, rarely exceeding ½ in., entire, coriaceous, and often shining, the margins flat or slightly recurved, contracted into a very short petiole. Flowers few, in short sessile terminal umbels. Sepals small. Petals and stamens not seen. Carpels 5, glabrous, ovate when ripe, shortly beaked. Seeds not seen.—*Eriostemon Oldfieldii*, F. Muell. Fragm. i. 3, and Pl. Vict. i. 125.

Tasmania. At the base of Mount Lapeyrouse, *Oldfield* and *Stuart*. The foliage is, at first sight, so much like that of *Eriostemon virgatus*, that the specimens without flowers first received were mistaken for that plant (Hook. f. Fl. Tasm. ii. 358); but even the leaves may be known by their end much more obtuse or retuse, and never mucronate.

11. **P. rotundifolium,** *Benth.* An erect much-branched shrub, the young branches minutely pubescent. Leaves crowded, almost imbricate, small, obovate or orbicular, obtuse or minutely mucronate, mostly 2 to 3 lines long, flat or concave, coriaceous, glabrous, very shortly petiolate or almost sessile. Flowers several, in a terminal sessile umbel, almost contracted into a head in our specimens, which are not fully out. Sepals small. Petals valvate, glabrous. Filaments filiform, glabrous. Ovary glabrous, on a very short disk, the terminal appendages of the carpels very short.—*Eriostemon rotundifolius*, A. Cunn., Endl. in Hueg. Enum. 15.

N. S. Wales. Hunter's River, *A. Cunningham.*

12. **P. brachyphyllum,** *Benth.* A dwarf shrub, with a thick woody base and numerous branching stems of 2 to 4 in., glabrous or minutely pubescent. Leaves small, crowded, sessile or nearly so, very spreading, obovate or orbicular, very obtuse, rarely exceeding 2 lines, thick, coriaceous and nerveless, very convex. Flowers few (usually 3 to 5), in terminal clusters or short racemes. Pedicels short. Sepals small. Petals about 1½ lines long, glabrous, valvate. Filaments filiform. Ovary glabrous, on a distinct stalk-like disk, the terminal appendages of the carpels very short.

S. Australia. Encounter Bay and near Coffin Bay, *F. Mueller.*

13. **P. diosmeum,** *A. Juss. in Mem. Soc. Hist. Nat. Par.* ii. 135, *t.* 11. An erect heath-like shrub, the branches more or less hirsute. Leaves crowded, linear, obtuse, mostly under ½ in., the margins revolute, scabrous or sprinkled with a few hairs. Flowers yellow, numerous, in a sessile terminal head, intermixed with linear bracts shorter than the calyx. Sepals linear, erect, pubescent, about half as long as the petals. Petals about 3 lines long, glabrous, valvate. Stamens exserted; filaments subulate, glabrous; anthers didymous. Carpels very short, with the terminal appendages 4 times as long, glabrous or hairy; style glabrous. Ripe fruit not seen.—*P. phylicoides*, Sieb. in Spreng. Syst. Cur. Post. 164; *Chorilæna angustifolia*, F. Muell. in Trans. Phil. Soc. Vict. i. 10; *Eriostemon phylicoides*, F. Muell. Fragm. i. 107, and Pl. Vict. i. 131.

N. S. Wales. Port Jackson to the Blue Mountains, *Sieber, n.* 110, *Fraser, A. Cunningham,* and others.

Victoria. Sandy heaths near Mount Imlay, abundant, *F. Mueller.*

SECT. 2. EUPHEBALIUM.—The whole plant, or at least the inflorescence and calyx, often also the petals and ovary, more or less covered with scurfy peltate scales, often fringed at the edge, those of the ovary often closely imbricate in one mass. Petals laterally imbricate or rarely almost valvate in the bud, with inflexed valvate tips.

14. **P. ozothamnoides,** *F. Muell. in Trans. Vict. Inst.* i. 31. A rigid shrub, the branches brown with scurfy scales. Leaves obovate, very obtuse, under ½ in. long, the margins recurved, narrowed into a short petiole, thick, coriaceous, glabrous and shining above when full-grown, white underneath with scurfy scales mixed with stellate hairs which are also sprinkled on the upper surface of the young leaves. Flowers few, in small terminal sessile umbels, like those of *P. squamulosum* in size and structure as well as in the scurfy scales.—*Eriostemon ozothamnoides*, F. Muell. Fragm. i. 103.

Victoria. Mitta-Mitta, Cabongra, and Livingstone rivers, *F. Mueller.*

15. **P. obcordatum,** *A. Cunn. Herb.* A small densely-branched shrub, silvery-white or hoary with scurfy scales. Leaves distinctly petiolate, either broadly obcordate and about 1 line long, or in luxuriant specimens broadly cuneate and attaining 2 lines, very obtuse and emarginate, flat, rather thick, glabrous above with 2 to 4 large prominent glands, silvery underneath. Flowers much smaller than in the allied species, few on short pedicels at the ends of the branches and uppermost axils, forming short terminal leafy corymbs. Structure of the flowers as in *P. squamulosum.*

N. S. Wales. S.W. of St. George's Range, *A. Cunningham.*

16. **P. glandulosum,** *Hook. in Mitch. Trop. Austr.* 199. Very closely allied to some of the smaller much-branched forms of *P. squamulosum*, with the same scurfy indumentum, inflorescence, and flowers, and recently united with that species by F. Mueller (Pl. Vict. i. 130). It appears however to me to differ sufficiently in the leaves, which are narrowly linear-cuneate, emarginate or almost 2-lobed at the end, with revolute or recurved margins varying from 2 or 3 lines to ¾ in. in length. In the ordinary form also the branches and leaves are covered with large glandular tubercles.—*P. sediflorum*, F. Muell. in Trans. Vict. Inst. i. 30; *Eriostemon sediflorus*, F. Muell. Fragm. i. 102.

Queensland. On the Upper Maranoa, *Mitchell.*
N. S. Wales. Eurylean scrub, *A. Cunningham.*
Victoria. Snowy River, Pinch Mountains, and the N.W. desert of the colony, *F. Mueller.*
S. Australia. Extending to Lake Torrens, *F. Mueller.*

Var. (?) *Daviesi.* Leaves narrow-linear, broader and emarginate at the end as in the ordinary form, but the glandular tubercles few or none.—*P. Daviesi*, Hook. f. Fl. Tasm. ii. 358.

Tasmania. E. coast near St. Helen's Bay, *Davies.* The ovary, in the flowers I have examined, has the peltate scurfy scales of the allied species.

17. **P. squamulosum,** *Vent. Jard. Malm. t.* 102. An erect shrub, varying in height but never arborescent, the young branches brown with scurfy scales. Leaves shortly petiolate, oblong or linear, obtuse but often mucronulate, ½ to 1½ in. long, somewhat coriaceous, the margins flat or slightly recurved, smooth above or slightly glandular-tuberculate, covered underneath with scurfy peltate scales. Flowers yellow, in terminal sessile, simple or compound umbels or corymbs, not exceeding the last leaves, the pedicels, calyx, and petals covered with comparatively large scurfy scales.

Calyx very short, truncate, with minute or short and broad teeth. Petals barely 2 lines long, slightly imbricate with inflexed valvate tips. Stamens exserted (1 or 2 occasionally wanting); filaments glabrous; anthers tipped by a small gland. Ovary densely covered with white or brown scurfy ciliate scales. Cocci small, broad, obscurely beaked. Seeds scarcely shining.—DC. Prod. i. 720; A. Juss. in Mem. Soc. Hist. Nat. Par. ii. 132; *P. elæagnifolium*, A. Juss. l. c. 132, t. 11; *P. aureum*, A. Cunn. in Field, N. S. Wales, 331, with a figure (the specimens not so stunted as represented in the plate); *Eriostemon lepidotus*, Spreng. Syst. ii. 322; F. Muell. Fragm. i. 104, and Pl. Vict. i. 130.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Sieber*, *n.* 112 (misnamed *P. anceps*); Liverpool plains, *A. Cunningham*; Clarence river, *Beckler.*

Victoria. Genoa Peak and river, *F. Mueller.*

Var. *alpinum.* Diffuse, with crowded more coriaceous leaves, rarely exceeding ½ in.—*P. podocarpoides*, F. Muell. in Trans. Vict. Inst. i. 31; *Eriostemon alpinus*, F. Muell. Fragm. i. 103.—Summits of the Australian Alps at an elevation of 5000 to 6000 ft.

Var. (?) *stenophyllum.* A small shrub. Leaves small, narrow, with the margins of the leaves closely revolute so as to be often almost terete.—In the Grampian Mountains and desert of the Tattiara country towards the Murray river, *F. Mueller.*—This form appears to me so constantly distinct, as far as our specimens show, that I should have described it as a separate species, were it not that F. Mueller includes it without any hesitation in the *P. squamulosum*, and I might thus be adding a useless synonym.

18. **P. tuberculosum,** *Benth.* An erect shrub, with rigid rather slender branches, covered with minute scurfy scales and prominent glandular tubercles as in *P. glandulosum.* Leaves narrow-linear, obtuse, rarely above ½ in. long, the upper surface channelled, glabrous and tubercular, the under side whitish with scurfy scales, the midrib prominent and the margins sometimes recurved. Flowers few, in terminal umbels, scurfy-scaly as well as the pedicels. Calyx small, the lobes or teeth prominent and usually as long at least as the tube. Petals broad, nearly 2 lines long, slightly imbricate with inflexed valvate tips. Stamens exserted, glabrous; anthers without any conspicuous gland. Ovary scaly.—*Eriostemon tuberculosus*, F. Muell. Pl. Vict. i. 130.

W. Australia, *Drummond*, *n.* 63; Fitzgerald river, *Maxwell.* This and the three following western species, like *P. squamulosum* and its allies in the east, are chiefly distinguished from each other by the foliage, and, as a whole, the four western species scarcely differ in anything but the foliage from the four or five eastern ones, except that the teeth or lobes of the calyx, small as they are, are more prominent.

19. **P. microphyllum,** *Turcz. in Bull. Mosc.* 1852, ii. 159. A heath-like shrub, the branches covered with scurfy scales. Leaves petiolate or nearly sessile, oblong or oblong-linear, obtuse, 2 to 4 lines long, the margins revolute, coriaceous, glabrous and shining above, and sometimes slightly glandular, white with minute scurfy scales underneath. Flowers few, in sessile terminal umbels, scurfy-scaly outside as well as the pedicels. Calyx small, the triangular lobes at least as long as the tube. Petals rather smaller and not so broad as in *P. tuberculosum*, but otherwise the same. Cocci small, broad, obscurely beaked.

W. Australia. Between Swan River and King George's Sound, *Drummond*, 5*th Coll.* *n.* 208, and other unnumbered specimens.

20. **P. Drummondii,** *Benth.* A small, elegant, much-branched shrub,

the branches covered with scurfy scales mixed with a minute stellate pubescence. Leaves very shortly petiolate, oblong, obtuse, 2 to 3 lines long, flat, coriaceous, glabrous and smooth above, silvery-white underneath with scurfy scales often mixed with a minute pubescence, the midrib not prominent. Flowers yellow, in terminal sessile umbels shortly exceeding the leaves and of the size of those of *P. squamulosum*, scurfy-scaly outside as well as the pedicels. Calyx-lobes triangular or lanceolate, as long as or longer than the tube. Petals, stamens, and ovary of *P. squamulosum.*

W. Australia, *Drummond, n.* 13.

21. **P. filifolium,** *Turcz. in Bull. Mosc.* 1852, ii. 159. An erect virgately-branched shrub, hoary all over with minute scurfy scales, or the young branches rust-coloured. Leaves narrow-linear, almost terete, obtuse, ½ to 1 in. long, whitish and scurfy-scaly on both sides. Flowers few, on rather long terminal pedicels. Calyx-lobes broadly triangular, as long as the tube. Petals, stamens, and ovary of *P. squamulosum.* Cocci broad, marked with deep transverse wrinkles.

W. Australia, *Drummond, 4th Coll. n.* 178; *5th Coll. n.* 206; *J. S. Roe.*

22. **P. Billardieri,** *A. Juss. in Mem. Soc. Hist. Nat. Par.* ii. 134. An erect shrub or small tree, the branches angular and clothed with small brown scurfy scales. Leaves oblong, lanceolate or linear, obtuse or acute, rarely under ½ in. and often 3 in., or in very luxuriant specimens 4 or 5 in. long, entire, coriaceous, flat or with recurved margins, glabrous above, silvery-white underneath with minute scales. Flowers in axillary corymbs, shortly pedunculate, but always shorter than the leaves; peduncles and pedicels thick and scaly. Calyx small, lobed. Petals about 2 lines long, glabrous, slightly imbricate, with inflexed valvate tips. Stamens exserted; filaments often hairy in the lower portion. Ovary glabrous. Cocci small, broad, with a very short beak. Seeds shining.—Hook. f. Fl. Tasm. i. 63; *Eriostemon squameus*, Labill. Pl. Nov. Holl. i. 111, t. 141; F. Muell. Fragm. i. 104, and Pl. Vict. i. 129; *P. retusum*, Hook. Journ. Bot. i. 254, and Ic. Pl. t. 57; *P. elatum*, A. Cunn. in Field, N. S. Wales, 331; *P. elæagnoides*, Sieb. Pl. Exs.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Sieber, n.* 111, and others; northward to Hastings river, *Beckler*, and Clarence river, *C. Moore;* southward to Illawara, *Backhouse.*

Victoria. Damp forest-valleys near Apollo Bay, towards Cape Otway, and near the sources of the Barwon river, *F. Mueller.*

Tasmania. Port Dalrymple, *R. Brown;* abundant throughout the colony in damp woods, *J. D. Hooker.*

23. **P. argenteum,** *Sm. in Rees' Cycl.* xxvii. A tall, stout, erect shrub, the younger branches angular and covered with white scurfy scales. Leaves lanceolate, acute or obtuse, 2 to 3 or sometimes 4 in. long, entire, flat, narrowed at the base, glabrous on both sides when full grown, sprinkled underneath when young with a few scurfy scales. Flowers larger than in most species, in small axillary or terminal simple or compound cymes, much shorter than the leaves, the whole inflorescence as well as the calyx and petals densely covered with silvery-scurfy scales. Calyx-lobes about as long as the tube. Petals 2½ to near 3 lines long, valvate. Stamens shorter than the petals, glabrous. Ovary densely scaly. Cocci truncate, with short divergent beaks.

—*P. anceps,* DC. Prod. i. 719; A. Juss. in Mem. Soc. Hist. Nat. Par. ii. 133, t. 12; Bartl. in Pl. Preiss. i. 171; *Eriostemon anceps,* Spreng. Syst. ii. 322; F. Muell. Fragm. i. 103.

W. Australia. King George's Sound, *Menzies, R. Brown,* and others; Port Leschenault and Princess Royal Harbour, *Preiss, n.* 2011; and various localities near the S. coast, *Drummond, Oldfield,* and others.

24. **P. ovatifolium,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 99. A compact, much branched, bushy shrub, with much the aspect of the European Box, the young branches rusty or hoary with scurfy scales. Leaves shortly petiolate, broadly ovate, very obtuse, rarely exceeding ½ in. and often smaller, flat or with slightly recurved thickened margins, coriaceous, smooth and shining above, hoary or white underneath with scurfy scales. Peduncles axillary, 1-flowered, shorter than the leaves, bearing 2 or 3 small leafy bracts. Calyx-lobes triangular, with few scurfy scales. Petals nearly 3 lines long, without scales (only seen fully expanded). Stamens shorter than the petals, the filaments slightly dilated. Ovary densely covered with silvery scales. Cocci very minutely beaked.—*Eriostemon ovatifolius,* F. Muell. Fragm. i. 103; Pl. Vict. i. 131.

Victoria. Alpine regions of the Munyang mountains and among rocks between Mount Wellington and Hardinge range towards the sources of Macalister river, *F. Mueller.*

25. **P. rude,** *Bartl. in Pl. Preiss.* i. 172. A much-branched bushy shrub, the young branches white with scurfy scales. Leaves crowded, broadly cuneate, obcordate or obovate, very obtuse, truncate or shortly 2-lobed, ½ in. long, or less on the flowering branches, twice as long on luxuriant barren shoots, entire, narrowed at the base, flat, green on both sides or whitish with scurfy scales. Peduncles axillary, 1- or very rarely 2-flowered, shorter than the leaves, covered as well as the calyx and petals with silvery scales. Calyx small, truncate, with very small teeth. Petals 2 lines long or rather more, valvate. Stamens shorter than the petals; filaments glabrous, dilated at the base. Ovary scaly. Cocci with a conical beak.—*P. bilobum,* Bartl. in Pl. Preiss. i. 172, not Lindley; *Eriostemon bilobus,* F. Muell. Fragm. i. 102.

W. Australia. King George's Sound and islands on the S. coast, *R. Brown, A. Cunningham,* and others; Bald Head and Konkongerup hills, *Preiss, n.* 2038 and 2039, and other parts of the S. districts, *Drummond,* 4*th Coll. and* 5*th Coll. n.* 207, and others.

26. **P. amblycarpum,** *Benth.* Shrubby, the young branches white with scurfy scales. Leaves linear-cuneate, very obtuse, not exceeding ½ in., notched or sometimes 2-lobed at the top, but otherwise entire, narrowed at the base, thick, scurfy-scaly when young, green when full grown. Peduncles axillary, 1-flowered, shorter than the leaves, more or less covered as well as the calyx and petals with scurfy scales. Calyx-teeth very short and broad. Petals not 2 lines long, valvate or very slightly imbricate, with inflexed valvate tips. Stamens shorter than the petals; filaments glabrous. Ovary almost without scales. Cocci angular at the top, but scarcely beaked.—*Eriostemon amblycarpus,* F. Muell. Fragm. i. 102.

W. Australia. Fitzgerald river, *Maxwell.*

27. **P. Baxteri,** *Benth.* A rigid shrub, the young branches white with scurfy scales. Leaves crowded and clustered in the axils, linear-cuneate, ½ to

¾ in. long, much dilated at the summit, with 2 diverging or divaricate lobes, otherwise entire, rigid, the margins revolute, glandular-scabrous above, scurfy-scaly underneath. Flowers much larger than in any other *Phebalium*, on very short axillary pedicels with 2 or 3 leafy bracts. Calyx-lobes almost as long as the tube. Petals 4 to 5 lines long, densely scaly outside, lanceolate with small inflexed tips, but the bud not seen. Longer stamens almost equalling the petals, filaments flattened, glabrous; anthers minutely apiculate. Ovary bearing a few scales. Fruit not seen.

W. Australia. S. coast, *Baxter* (*Hb. R. Br.*).

7. MICROCYBE, Turcz.

Sepals 5, small, thin, free or slightly united. Petals 5, slightly imbricate in the bud. Disk none. Stamens 10, exserted; filaments filiform, glabrous or ciliate at the base; anthers tipped with a small gland. Carpels 2, distinct; styles inserted above the middle and immediately united into one filiform style, with a minute stigma. Ovules 2, collateral, pendulous. Cocci 2-valved, rounded at the top and not beaked, the endocarp cartilaginous and separating elastically. Seeds usually solitary.—Heath-like shrubs, glabrous except scurfy scales on the young branches and under side of the leaves. Leaves numerous, small. Flowers small, in dense terminal sessile heads, with small leafy bracts at the base of the outer ones.

The genus is limited to Australia, and might be considered as a section of *Phebalium*. A peculiar habit, however, accompanied by a marked difference in the ovary, has induced me to retain it as a separate genus.

Leaves very spreading, linear, smooth or rough, with small glandular tubercles, the upper ones usually exceeding the flower-heads . . .	1. *M. pauciflora.*
Leaves slightly spreading, linear, with few large prominent transparent glands shorter than the flower-heads	2. *M. multiflora.*
Leaves very small, ovate, convex, reflexed, shorter than the small flower-heads	3. *M. albiflora.*

1. **M. pauciflora,** *Turcz. in Bull. Mosc.* 1852, ii. 167. Branches rigid, hoary or almost tomentose with peltate fringed scales or stellate hairs. Leaves spreading, linear, obtuse, 2 to 4 lines long, the margins revolute, so as to be almost terete, coriaceous, glabrous and smooth above, or rough with very smooth glandular tubercles, the under side scaly-tomentose but usually concealed. Flower-heads about 3 lines diameter, sessile amongst the upper leaves, which usually exceed them. Sepals linear-lanceolate, transparent, small, and easily overlooked. Petals scarcely 1½ lines long. Filaments glabrous or ciliate. Cocci small, rounded at the top, the valves coriaceous, pitted but not wrinkled, and usually without scales. Seeds tuberculate.—*Asterolasia chorilænoides*, F. Muell. Trans. Vict. Inst. i. 116; *Eriostemon capitatus*, F. Muell. Fragm. i. 106.

S. Australia. Seacoast near Lake Hamilton, *Wilhelmi;* Venus Bay, *Warburton.*

W. Australia, *Drummond*, 5*th Coll. n.* 209; King George's Sound, *A. Cunningham;* E. Mount Barren, *Herb. Mueller.*

2. **M. multiflora,** *Turcz. in Bull. Mosc.* 1852, ii. 166. Glabrous, or the young branches slightly scaly. Leaves linear, obtuse, rarely exceeding 2 lines, the margins revolute so as to conceal the under surface, coriaceous,

almost shining, with 6 to 8 large prominent glandular tubercles. Flower-heads rather larger than in *M. pauciflora*. Sepals linear-spathulate. Petals nearly 2 lines long. Filaments glabrous. Cocci rounded as in *M. pauciflora*, but reticulate, and often retaining the scales of the ovary. Seeds reticulate.

W. Australia, *Drummond, 5th Coll. n.* 211.

3. **M. albiflora,** *Turcz. in Bull. Mosc.* 1852, ii. 167. Smaller than the other two species; the young branches scaly. Leaves ovate, obtuse, seldom above 1 line long, reflexed, convex, coriaceous, marked with a few large prominent transparent glands, the upper ones shorter than the flowers. Flower-heads mostly of only 3 or 4 small flowers. Sepals lanceolate, transparent, united to the middle, according to Turczaninow, but free or nearly so in our specimens. Petals scarcely 1 line long, slightly scaly outside. Ovary less scaly than in the other species. Fruit not seen.

W. Australia, *Drummond, 5th Coll. n.* 210.

8. GELEZNOWIA, Turcz.

(Sandfordia, *Drumm.*)

Sepals 5, large, petal-like, imbricate, exceeding the petals. Petals 5, oblong, imbricate in the bud. Disk inconspicuous. Stamens 10, shorter than the petals; filaments subulate, glabrous; anthers not apiculate. Carpels 5, distinct or nearly so; styles inserted near the summit, immediately united into one filiform style, with a peltate obscurely lobed stigma. Ovules 2, superposed. Cocci 2-valved, not beaked.—Rigid, usually glaucous shrubs. Leaves alternate, small, rigid, crowded or almost imbricate. Flowers 1 to 3 together, sessile at the ends of the branches, remarkable for the large, leafy or petal-like bracts and sepals, exceeding the leaves.

The genus is limited to Australia, and in common with several others united by F. Mueller with *Eriostemon*, but the peculiar habit, large calyx, and insertion of the styles appear to me sufficient to retain it as a genus.

Sepals oblong, not much exceeding the petals.
  Carpels of the fruit rounded at the top, not longer than broad . . 1. *G. verrucosa.*
  Carpels of the fruit narrowed at the top, fully twice as long as broad 2. *G. macrocarpa.*
Sepals broadly ovate or orbicular, the petals much shorter. Carpels of *G. verrucosa* . . . . 3. *G. calycina.*

1. **G. verrucosa,** *Turcz. in Bull. Mosc.* 1849, ii. 13. A bushy, rigid, glabrous, often glaucous shrub. Leaves crowded, obovate-oblong, obtuse, rarely exceeding 2 lines, thick, flat or concave above, convex underneath, and tuberculate with large prominent glands, a few of the upper leaves passing into sepal-like bracts. Sepals not 4 lines long, narrower than in *G. calycina*, the petals nearly as long, and both more or less glandular-warted outside. Ovary covered with minutely ciliate wart-like scales. Style elongated. Cocci (not yet quite ripe) not half so long as the petals, as broad as long, rounded at the top.—*Eriostemon Geleznowii*, F. Muell. Fragm. i. 107.

W. Australia, *Drummond, n.* 8. Some specimens from Sharks Bay, *Denham*, and Dirk Hartog's Island, *Milne*, appear to belong to the same species, but they are not in flower.

2. **G. macrocarpa,** *Benth.* From the fragmentary specimens we possess, this appears to be nearly allied to *G. verrucosa*, with similar small leaves,

except that they are not so thick. Flowers large, the sepals narrow as in *G. verrucosa*, but attaining ½ in. Petals nearly 5 lines. Cocci (not yet fully ripe) more than twice as long as broad, narrowed at the top, attaining about 3 lines, covered upwards with wart-like glands.

W. Australia. Murchison river, *Oldfield.*

3. **G. calycina,** *Benth.* Rigid and erect, glaucous, and often turning yellow in drying, glabrous, or with a few hairs under the flowers. Leaves crowded, obovate or oblong, obtuse, in some specimens 2 to 3 lines long, in others attaining ½ in., the uppermost passing into sepal-like bracts. Sepals broadly ovate or almost orbicular, attaining 4 or 5 lines. Petals very much shorter and narrower. Ovary covered with wart-like scales. Style rather short. Cocci (not yet quite ripe) not half so long as the petals, as broad as long, rounded at the top.—*Sandfordia calycina,* Drumm. in Hook. Kew Journ. vii. 54; *Eriostemon Sandfordii,* F. Muell. Fragm. i. 107.

W. Australia. Sand plains, Hill river, and S. of the Irwin, *Drummond;* Murchison river, *Oldfield.*

9. PHILOTHECA, Rudge.

Calyx 5-cleft. Petals 5, imbricate in the bud. Disk slightly lobed. Stamens 10, shorter than the petals; filaments united into a glabrous tube at the base, free upwards, and very hairy; anthers oblong, all perfect, minutely apiculate. Carpels 5, nearly distinct from the base; styles inserted below the middle, and immediately united in a single style, hirsute in the middle; stigma small. Ovules 2 in each carpel, superposed. Cocci truncate, 2-valved, the endocarp cartilaginous and separating elastically.—Erect, heath-like shrubs, glabrous, or nearly so. Leaves crowded, alternate, narrow-linear. Flowers terminal, nearly sessile, solitary or two or three together.

A genus entirely Australian, differing from *Eriostemon,* with which F. Mueller unites it, only in the monadelphous stamens.

Leaves obtuse, mostly under 3 lines long . . . . 1. *P. australis.*
Leaves acute, mostly above 3 lines long . . . . 2. *P. Reichenbachiana.*

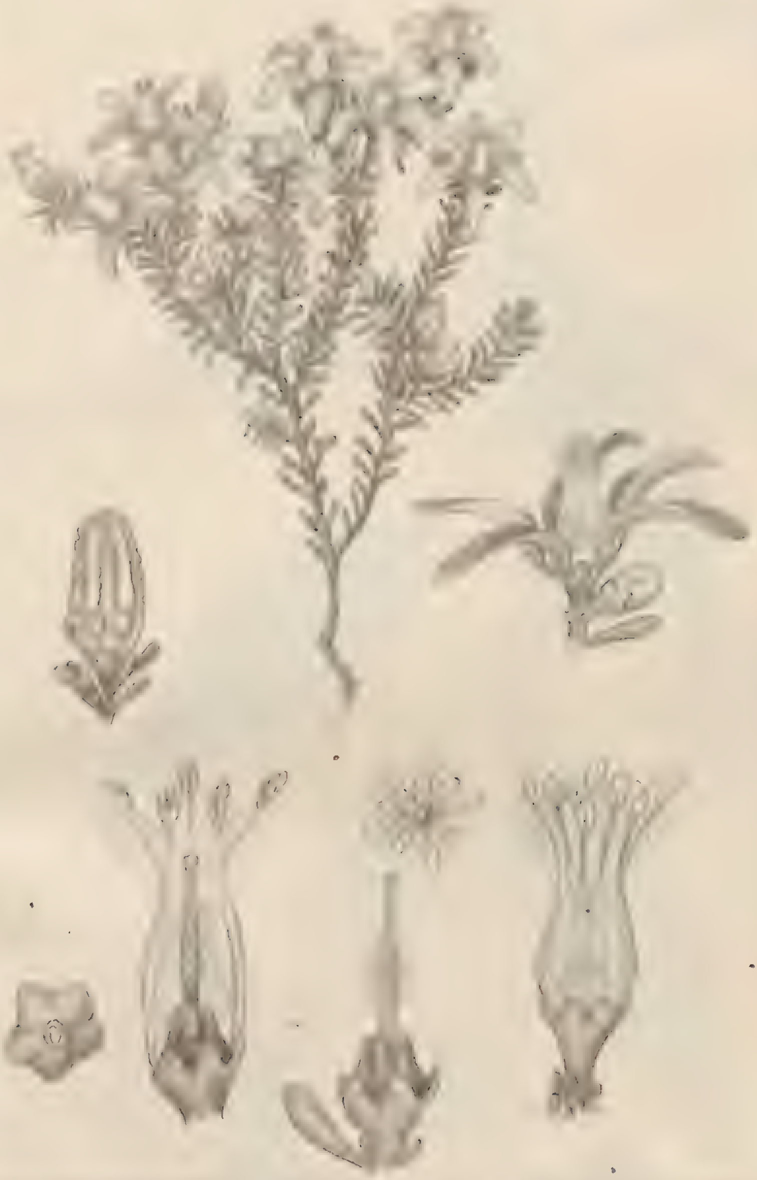
1. **P. australis,** *Rudge, in Trans. Linn. Soc.* xi. 298, *t.* 21. Glabrous or sprinkled with a minute pubescence. Leaves numerous, linear, obtuse, rarely exceeding 3 lines, rather thick, flat or channelled above, very convex underneath, or almost terete. Flowers usually solitary, but sometimes 2 or 3 together. Sepals small, broadly triangular. Petals 3 or 4 lines long, broadly lanceolate, minutely hoary-pubescent on both sides, except a broad glabrous central line outside. Stamens rather shorter than the petals. Cocci shortly beaked.—*Eriostemon salsolifolius,* Sm. in Rees, Cycl. xiii.

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 307, and others.

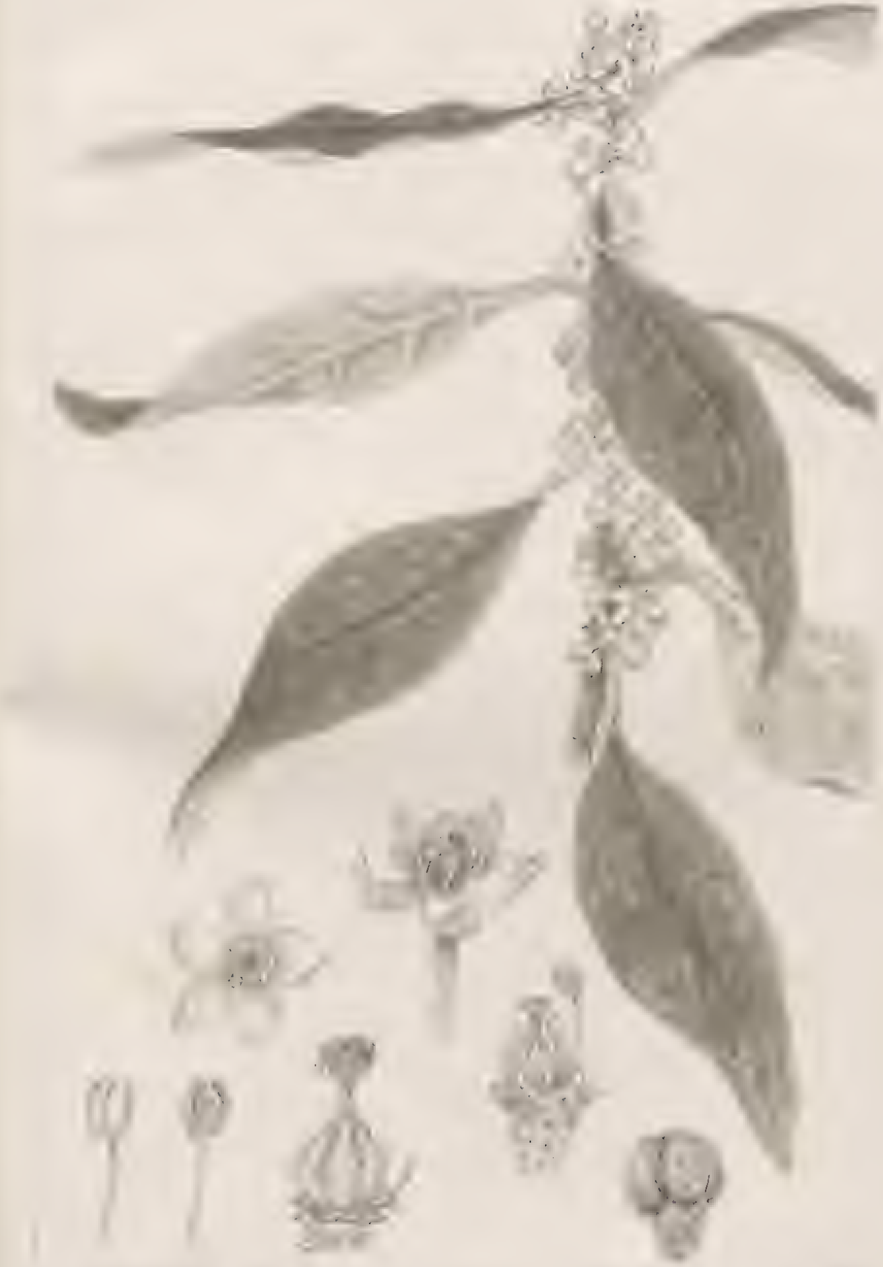
Var. *parviflora.* Leaves more ciliate. Flowers much smaller; the petals scarcely 2½ lines long.—*P. ciliata,* Hook. in Mitch. Trop. Austr. 347.

Queensland. Near Mount Faraday, *Mitchell.*

2. **P. Reichenbachiana,** *Sieb.; Spreng. Syst. Cur. Post.* 253. Very near *P. australis,* with which F. Mueller proposes to unite it, but the leaves always appear to be acute and longer, although rarely exceeding ½ in., the point sometimes quite pungent. Flowers usually larger than in *P. australis,*



[illegible]



Casia

and the hairs of the upper part of the filaments so long and dense as completely to cover the anthers.—Reichb. Icon. Exot. t. 200 (incorrect as to carpological details); *P. longifolia*, Turcz. in Bull. Mosc. 1849, ii. 16.

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 308, and others; in the interior to the northward of Bathurst, *A. Cunningham.*

P. Gaudichaudi, G. Don, Gen. Syst. i. 792, from N. S. Wales, is not described so as to be recognizable.

10. DRUMMONDITA, Harv.

Sepals 5, short. Petals 5, erect, concave, imbricate in the bud. Disk fleshy, 5-lobed. Stamens 10, the filaments united into a long hairy tube, free at the top, 5 longer ones without anthers, plumose with long hairs, 5 shorter ones bearing anthers bearded on the back, acute at the top. Carpels 5, glabrous, free from the base; styles inserted near their summit, and immediately united into one filiform style; stigma capitate. Fruit unknown.—Shrub with heath-like leaves, and solitary terminal yellowish flowers.

The genus is limited to a single species, and appears from the character to differ from *Philotheca* only in the abortion of half the anthers. The only specimen, however, which I have seen, is a mere fragment insufficient for proper examination, and I am therefore unwilling to make any change without further information.

1. **D. ericoides,** *Harv. in Hook. Kew Journ.* vii. 53. An erect, branching, heath-like shrub. Leaves crowded, linear, semiterete, channelled above, ciliolate, with a large terminal gland, and sprinkled with black glandular dots. Flowers terminal, solitary, erect, almost sessile. Petals yellowish, green at the extremity. Staminal tube longer than the petals, white-tomentose outside, purple above the middle, sparingly pubescent inside.

W. Australia. Near the summit of White Peak, *J. Drummond.*

11. ASTEROLASIA, F. Muell.

(Urocarpus, *Drumm.*)

Calyx very minute or obsolete. Petals 5, tomentose outside, valvate and usually induplicate in the bud. Disk none. Stamens 10 or more, free, filaments filiform, glabrous or very slightly ciliate, anthers not apiculate. Carpels 2 to 5, united to the middle, or nearly to the top, into a single shortly-lobed or truncate ovary of 2 to 5 cells. Style inserted between the lobes, filiform, with a large reflexed peltate or deeply-lobed stigma. Cocci tardily separating, truncate, and often beaked, 2-valved; endocarp cartilaginous, separating elastically.—Shrubs or undershrubs, more or less stellate-tomentose, or, in one species, the tomentum united into scurfy scales. Leaves alternate, simple. Flowers sessile or pedicellate, axillary or terminal, solitary or few together.

The genus is limited to Australia, and, with several of the preceding ones, has been recently united with *Eriostemon* by F. Mueller; but the union of the carpels, more complete than in the exceptional *Eriostemon trachyphyllus*, the large reflexed stigma, the great reduction or abortion of the calyx, and the æstivation of the petals, are accompanied by differences in habit, which seem fully to justify the maintenance of the genus. I have now added *Urocarpus*, Drumm., as a section, for, on a detailed examination of all the species, the differences are reduced to the number of carpels of the ovary, which is variable. The curious tendency to an increase in the usual number of stamens is observable in some species of both sections.

SECT. 1. **Euasterolasia.**—*Ovary 5-merous.*

Stigma reflexed-peltate, scarcely lobed. Ovary with 5 erect lobes.
Flowers pedicellate.
Leaves ovate to lanceolate, 1 to 2 in., glabrous and smooth above . . . . 1. *A. correifolia.*
Leaves obovate to narrow-oblong, rarely above 1 in., rough above with stellate hairs . . . . 2. *A. Muelleri.*
Flowers sessile. Leaves obovate, coriaceous, glabrous above . 3. *A. buxifolia.*
Stigma with 5 distinct reflexed lobes. Ovary truncate, scarcely lobed, slightly depressed in the centre.
Leaves flat, obovate-oblong or lanceolate, ¾ to 1½ in., tomentose on both sides. Flowers shortly pedicellate . . . . 4. *A. mollis.*
Leaves under ½ in. Flowers sessile.
Leaves obovate or cuneate, flat or concave, tomentose on both sides . . . . 5. *A. pleurandroides.*
Leaves ovate or oblong, the margins revolute, glabrous above 6. *A. trymalioides.*

SECT. 2. **Urocarpus.**—*Ovary 2–3-merous.*

Indumentum scaly. Ovary divided to the middle. Leaves oblong 7. *A. squamuligera.*
Indumentum of stellate hairs. Leaves mostly ovate.
Stamens 10 to 15. Ovary usually 2-merous.
Ovary with 2 erect lobes . . . . 8. *A. pallida.*
Ovary truncate, not lobed . . . . 9. *A. phebalioides.*
Stamens above 20. Ovary usually 3-merous . . . . 10. *A. grandiflora.*

SECTION 1. EUASTEROLASIA.—Ovary 5-merous.

1. **A. correifolia,** *Benth.* A tall shrub, the branches densely tomentose. Leaves petiolate, from ovate to lanceolate, obtuse, mostly 1 to 2 in. long, flat, glabrous and smooth above, softly velvety-tomentose underneath. Flowers (white?) on short pedicels, in axillary or terminal clusters. Calyx exceedingly minute, concealed under the stellate hairs. Petals about 2½ lines long, valvate and slightly induplicate, tomentose outside. Stamens 10. Ovary densely tomentose, with 5 short, erect lobes. Stigma large, reflexed-peltate, scarcely lobed. Cocci small, truncate, with incurved beaks on their outer angle.—*Phebalium correæfolium*, A. Juss. in Mem. Soc. Hist. Nat. Par. ii. 130, t. 10; *P. ovatum*, Sieb. Pl. Exs.; *Eriostemon correifolius* (partly), F. Muell. Fragm. i. 105; Pl. Vict. i. 132.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 113, *A. Cunningham*; Paramatta, *Woolls.*

2. **A. Muelleri,** *Benth.* A low shrub, allied to *A. correifolia*, with which F. Mueller now unites it, but from the specimens I have seen it appears to me better to consider it as a distinct species, as he originally proposed. Leaves petiolate, from obovate to narrow-oblong, very obtuse, rarely exceeding 1 in. when very luxuriant, and often much smaller, flat, narrowed at the base, rough above with scattered stellate hairs, densely tomentose underneath. Flowers of *A. correifolia*, but the pedicels usually longer, and the calyx rather more conspicuous. Cocci truncate as in that species, but the heads much more horizontally divaricate.—*Phebalium asteriscophorum*, F. Muell. in Trans. Vict. Inst. i. 31; *Eriostemon correifolius* (partly), F. Muell. Fragm. i. 105, and Pl. Vict. i. 132.

Victoria. Ravines of Buffalo mountains, Buffalo river, and Mount Disappointment, *F. Mueller.*

3. **A. buxifolia,** *Benth.* A rigid shrub of several feet, the young branches densely tomentose. Leaves petiolate, from obovate to oblong-cuneate, very obtuse, mostly about ½ in. long; the margins slightly recurved, narrowed at the base, coriaceous, glabrous and shining above, white underneath with a short dense tomentum. Flowers terminal or axillary, sessile within 3 or 4 ovate concave leafy bracts, assuming the appearance of sepals. Calyx entirely obsolete. Petals 2½ to nearly 3 lines long, tomentose outside. Stamens often 2 or 3 more than 10. Ovary glabrous, with 5 short erect lobes. Stigma large, reflexed-peltate, slightly lobed at the edge. Cocci glabrous, with shortly divaricate obtusely triangular beaks.—*Phebalium buxifolium,* A. Cunn. Herb.

N. S. Wales. Blue Mountains, *A. and R. Cunningham.*

4. **A. mollis,** *Benth.* An erect spreading shrub, softly tomentose, with stellate spreading hairs. Leaves petiolate, from obovate to oblong or lanceolate, obtuse, ¾ to 1½ in. long, flat, tomentose on both sides. Flowers shortly pedicellate, few together in terminal or rarely axillary clusters. Sepals small, lanceolate, closely appressed, so as to be almost concealed under the dense tomentum of the petals. Petals about 3 lines long. Ovary densely stellate-tomentose, rounded at the top, and slightly depressed in the centre, where the styles are inserted. Stigma large, reflexed, 5-lobed. Fruit not seen.—*Phebalium hexapetalum,* A. Juss. in Mem. Soc. Hist. Nat. Par. ii. 131, t. 11.

N. S. Wales, *Gaudichaud.* Arbuthnot's Range in the N.W. interior, *Fraser.* The flowers on Gaudichaud's specimen are very few, and one is certainly 5-merous; it is therefore probably by accident only that those examined by Jussieu were 6-merous.

5. **A. pleurandroides,** *F. Muell.* A low rigid shrub, densely tomentose or almost woolly. Leaves crowded, obcordate, spathulate or oblong-cuneate, very obtuse or truncate, rarely exceeding 4 lines, thick, flat or concave, stellate-hairy on both sides. Flowers yellow, closely sessile, solitary, terminal, although from the shortness of the branches they often appear axillary. Calyx none, unless it be represented by 3 or 4 upper smaller leaves, which appear to alternate with the petals. Petals induplicate-valvate, about 4 lines long, tomentose outside. Stamens 10. Ovary densely stellate-hirsute, truncate, scarcely depressed in the centre where the styles are attached. Stigma deeply divided into thick, linear, recurved, densely papillose lobes. Cocci tomentose, not beaked.—*A. phebalioides,* F. Muell. in Trans. Phil. Soc. Vict. i. 10; *Eriostemon pleurandroides,* F. Muell. Fragm. i. 106, and Pl. Vict. i. 133.

Victoria. Arid and stony slopes of the Serra and Victoria ranges, *F. Mueller.* I have adopted F. Mueller's change of the specific name from *phebalioides* to *pleurandroides,* as the latter is much more appropriate, and the former would clash with *Urocarpus phebalioides,* Drumm., now transferred to *Asterolasia.*

6. **A. trymalioides,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 10. A low rigid shrub, the branches densely tomentose. Leaves ovate obovate or oblong, very obtuse, mostly 2 to 4 lines long, the margins much revolute, coriaceous, glabrous and shining above when full-grown, tomentose underneath. Flowers yellow, sessile, terminal, solitary or 2 or 3 together, with 2 small bracts at their base. Calyx very small, with thin almost transparent ovate lobes. Petals induplicate-valvate in the bud, spreading, and attaining about 3 lines. Stamens 10. Ovary tomentose, truncate, slightly depressed

in the centre where the styles are inserted. Stigma deeply divided into oblong, reflexed, densely papillose lobes. Cocci tomentose, truncate, not beaked. Seeds smooth and shining.—*Eriostemon trymalioides*, F. Muell. Fragm. i. 106, and Pl. Vict. i. 134.

N. S. Wales. Mount Kosciusko, *F. Mueller.*

Victoria. On the highest summits of the Australian Alps, not descending below 5000 ft. elevation, *F. Mueller.*

SECTION 2. UROCARPUS.—Ovary 2- or 3-merous.

7. **A. squamuligera,** *Benth.* A weak shrub or undershrub, the younger branches covered with minute scurfy scales, often fringed with short rigid hairs. Leaves oblong-lanceolate, obtuse, ½ to near 1 in. long, rather thick, nerveless, narrowed into a short petiole. Flowers few, in terminal umbels, surrounded by short coloured bracts, with occasionally 1 or 2 longer leafy ones. Pedicels slender, rarely exceeding ½ in. Calyx very minute. Petals narrow-ovate, 3 to 3½ lines long. Stamens 10. Ovary of 2 or rarely 3 carpels, forming erect lobes, narrowed upwards, covered with scurfy scales. Stigma divided into 2 or 3 large reflexed lobes. Cocci, when young, obtusely acuminate and erect, but not seen ripe.—*Phebalium squamuligerum*, Hook. Ic. Pl. t. 727; *Eriostemon Hookeri*, F. Muell. Fragm. i. 104.

W. Australia. Between Swan River and King George's Sound, *Drummond.*

8. **A. pallida,** *Benth.* Branches weak, almost herbaceous, clothed with stellate hairs, sometimes slightly united into scales. Leaves distinctly petiolate, ovate or orbicular, very obtuse, 3 to 5 lines long, flat, sprinkled above and more densely covered underneath with stellate hairs. Pedicels 1-flowered, axillary and solitary, or several together in terminal umbels, with small or leafy bracts at their base. Petals 2 to 2½ lines long, induplicate-valvate, the part exposed in the bud stellate-tomentose. Stamens 10 to 15. Ovary densely stellate-hairy, consisting of 2 carpels, with 2 short erect lobes, between which the styles are inserted. Cocci beaked, the conical beaks remaining erect for some time after the flowering is over, becoming somewhat lengthened and divaricate at the fruit ripens.

W. Australia, *Drummond, n.* 42 *and* 112.

9. **A. phebalioides,** *Benth.* Branches elongated, often appearing glabrous, but really clothed with a minute stellate pubescence. Leaves on rather long petioles, orbicular, ovate or oblong, obtuse, mostly under ½ in. long, rarely ¾ in. Pedicels slender, either in terminal umbels soon becoming lateral, or 2 or 3 together in the upper axils. Flowers as in *A. pallida*, at least when fully out. Ovary stellate-hairy, truncate and not lobed, the 2 carpels united at the top, and retaining the shape for some time after flowering, the outer angles at length growing out into long horizontally diverging beaks.—*Urocarpus phebalioides*, Drumm. in Hook. Kew Journ. vii. 55; *Eriostemon Drummondii*, F. Muell. Fragm. i. 105.

W. Australia. Mount Lesueur, *Drummond.*

10. **A. grandiflora,** *Benth.* Branches rather slender, clothed with short stellate hairs. Leaves shortly petiolate, ovate or oblong, obtuse, mostly under ½ in. long, the margins recurved, the midrib prominent underneath,

sprinkled above and more densely clothed underneath with short stellate hairs. Pedicels terminal, usually several together, with short ovate, coloured or leafy bracts at their base. Petals induplicate-valvate, tomentose outside, not large when first expanded, but attaining at length 5 or 6 lines. Stamens 20 to 25. Ovary densely stellate-hairy, with 3 short erect lobes. Fruit not seen.—*Phebalium grandiflorum*, Hook. Ic. Pl. t. 724; *Eriostemon grandiflorus*, F. Muell. Fragm. i. 105.

W. Australia, *Drummond.*

12. CORREA, Sm.

(Didymeria, *Lindl.*)

Calyx cup-shaped, truncate and 4- or 8-toothed, or 4-lobed. Petals 4, valvate, connate in a cylindrical or campanulate tube, sometimes separating as the flower expands, spreading at the top. Disk shortly lobed. Stamens 8, free; anthers without appendages. Ovary of 4 carpels nearly distinct from the base; styles inserted above the middle, and immediately united into one filiform style, with a small often shortly 4-lobed stigma; ovules 2 in each carpel, superposed. Cocci 4, truncate, 2-valved, the endocarp cartilaginous and separating elastically.—Shrubs or rarely small trees, stellate-tomentose or rarely glabrous. Leaves opposite, petiolate, simple. Flowers rather large and showy, red yellow white or green, usually pendulous, solitary or 2 or 3 together, axillary or terminal. Petals usually mealy-tomentose outside.

The genus is limited to Australia.

Petals free after the flower is expanded.
  Calyx with 4 lanceolate teeth as long as the tube. Filaments dilated at the base . . . . 1. *C. æmula.*
  Calyx truncate, with 4 minute teeth. Filaments filiform or scarcely dilated . . . . 2. *C. alba.*
Petals connate or cohering till they fall off.
  Calyx truncate, with 4 minute or very broad teeth.
    Four of the filaments dilated below the middle . . . . . . 3. *C. speciosa.*
    Filaments all equally filiform or scarcely dilated . . . . . 4. *C. Lawrenciana.*
  Calyx with 4 short broad and 4 longer filiform teeth . . . . 5. *C. decumbens.*

1. **C. æmula,** *F. Muell. Fragm.* i. 3, *and Pl. Vict.* i. 139, *t.* 7. A tall shrub, with spreading branches, hirsute or tomentose with stellate often stipitate hairs. Leaves shortly petiolate, orbicular, ovate or ovate-lanceolate, obtuse, rarely exceeding 1 in., except in luxuriant barren shoots, often slightly cordate, scabrous above, densely tomentose underneath. Pedicels axillary, 1-flowered, slender, bearing a pair of small orbicular leafy bracts near the base, and 2 smaller subulate ones higher up. Flowers pendulous, dull-green or purple. Calyx sprinkled with stellate hairs, the lobes lanceolate acuminate, usually as long or longer than the tube. Petals linear, about 1 in. long, cohering when young, but separating as the flower expands. Filaments dilated and oblong near the base, filiform upwards. Ovary densely hirsute. Style glabrous.—*Didymeria æmula*, Lindl. in Mitch. Three Exped. ii. 198.

Victoria. Stony shady declivities of the Serra and Victoria ranges, *F. Mueller*, and previously gathered by *Mitchell* in the same district.

S. Australia. Rocky glens of the Barossa ranges and mountains near Encounter Bay, *F. Mueller.*

A. Cunningham's fruiting specimen, referred here by Lindley, appears to be rather the *C. speciosa*, with the calyx accidentally split up.

2. **C. alba,** *Andr. Bot. Rep. t.* 18. A compact much-branched shrub, rarely above 3 or 4 ft. high, and often much lower, the branches clothed with a hoary or rusty tomentum, either close or almost floccose. Leaves from orbicular to ovate obovate or elliptical, very obtuse, $\frac{1}{2}$ to 1 in. long or rarely more, coriaceous, slightly tomentose or at length glabrous above, densely tomentose underneath. Pedicels terminal, very short, solitary or 2 or 3 together. Flowers white or pink. Calyx tomentose, truncate, with 4 very small teeth. Petals tomentose outside, not exceeding $\frac{1}{2}$ in., free from their first opening, but connivent in a more bell-shaped and less elongated corolla than the other species. Filaments equally filiform or scarcely dilated.—Vent. Jard. Malm. t. 13; DC. Prod. i. 719; Bot. Reg. t. 515; F. Muell. Pl. Vict. i. 135; *C. cotinifolia*, Salisb. Parad. Lond. t. 100; *Mazeutoxeron rufum*, Labill. Voy. ii. 12, t. 17; *C. rufa*, Vent. Jard. Malm. in note to t. 13; Labill. Pl. Nov. Holl ii. 120; DC. Prod. i. 719; Hook. f. Fl. Tasm. i. 61.

Victoria. Frequent along the sandy or rocky seashore, *R. Brown; F. Mueller.*

Tasmania, *R. Brown;* abundant, especially near the coast, *J. D. Hooker.*

S. Australia. On the coast, extending to St. Vincent's Gulf, *F. Mueller;* Kangaroo Island, *Waterhouse.*

Var. *rotundifolia.* Densely hirsute. Leaves small and broad. Flowers sessile, terminal or in the forks of the upper branches.—*C. rotundifolia*, Lindl. in Mitch. Three Exped. ii. 219.—Near the Glenelg, *Mitchell;* apparently not uncommon along the coast of Victoria and S. Australia.

3. **C. speciosa,** *Ait. Epit. Hort. Kew.* 366. A shrub, variable in size and habit, usually rigid and low, and rarely exceeding 6 to 8 ft., the stellate tomentum very variable, usually loose and abundant on the branches or sometimes on the whole plant, dense and soft on the under side of the leaves, disappearing on the upper surface or sometimes on the whole plant, except the peduncles and flowers. Leaves very shortly petiolate, from broadly ovate or cordate to narrow-oblong or lanceolate, obtuse or retuse, usually from $\frac{3}{4}$ to $1\frac{1}{2}$ in. long, rarely all under 1 in., or the larger ones attaining 2 in. Flowers red, varying to white or yellowish-green, terminal, shortly pedicellate and pendulous, or a few rarely erect, solitary or 2 or 3 together. Calyx hoary or rusty-tomentose, truncate, with 4 minute teeth. Petals hoary-tomentose outside, united the greater part of their length into a cylindrical or slightly campanulate corolla of $\frac{3}{4}$ to $1\frac{1}{2}$ in., with 4 spreading lobes. Stamens exserted, the filaments of those opposite the petals more or less dilated below the middle.—DC. Prod. i. 719; F. Muell. Pl. Vict. i. 136.

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 238 *and* 239, and others; northward and southward to the limits of the colony, apparently not extending inland far beyond the Blue Mountains.

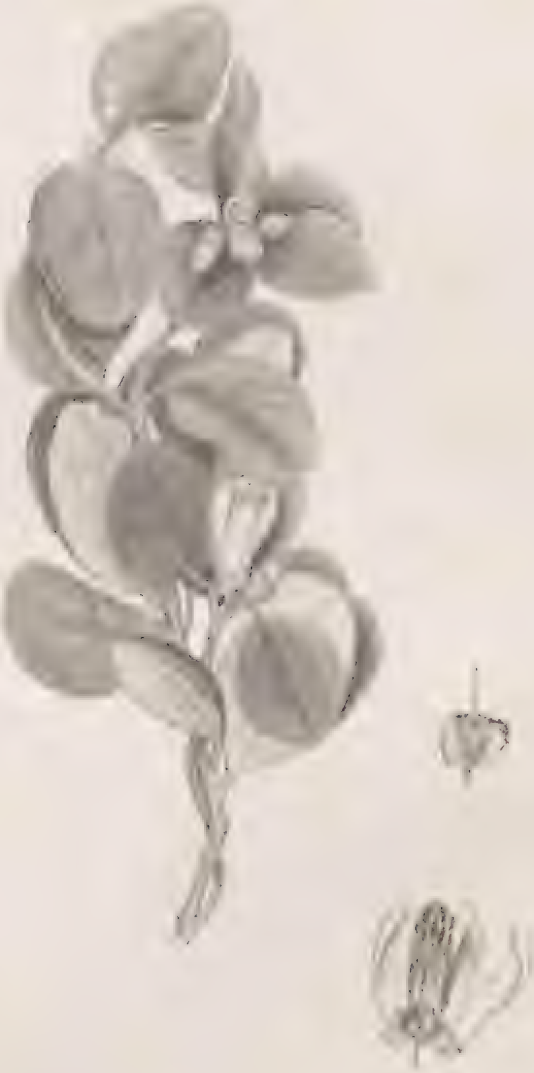
Victoria. Not rare in heathy and barren rocky localities, not ascending to alpine elevations; known to the colonists as *Native Fuchsia*, *F. Mueller.*

Tasmania, *R. Brown;* abundant throughout the colony, *J. D. Hooker.*

S. Australia. From the Great Australian Bight to Lake Torrens, *F. Mueller.*

W. Australia. King George's Sound, *Maclean.*

I follow F. Mueller in uniting under one name all *Correas* with a truncate 4-toothed calyx, united petals, and 4 of the filaments dilated. At the same time, although the following races may occasionally be found to pass one into another, yet they appear generally so distinct, that I feel some hesitation in refusing to recognize them as species.



Correa alba

a. normalis. Branches loosely and copiously tomentose, sometimes almost woolly or very hirsute. Leaves mostly cordate-ovate, rarely narrow, convex or bullate, with recurved and sometimes undulate or crisped margins, glabrous scabrous or loosely tomentose above, densely tomentose or woolly underneath. Flowers usually elongated, cylindrical.—*C. speciosa,* Andr. Bot. Rep. t. 653; Bot. Reg. t. 26; Bot. Mag. t. 1746 (flowers more erect than I have ever seen them); *C. rubra,* Sm. Exot. Bot. ii. 26; *Antomarchia rubra,* Colla, Hort. Ripul. App. ii. 345; *C. cordifolia,* Lindl. in Mitch. Three Exped. ii. 233, *C. virens,* Sm. Exot. Bot. ii. 25, t. 72; Bot. Reg. t. 3; Bot. Mag. t. 1901; *C. viridiflora,* Andr. Bot. Rep. t. 436; Bonpl. Jard. Malm. 33, t. 12 (the last 2 names referring to a green-flowered variety); *C. cardinalis,* F. Muell.; Hook. Bot. Mag. t. 4912 (a narrow-leaved variety).—N. S. Wales, Victoria, and Tasmania.

b. Backhousiana. Branches rather closely tomentose. Leaves ovate or oblong, scarcely or not at all cordate, coriaceous, flat, glabrous above, closely but usually densely tomentose underneath. Flowers nearly cylindrical, above 1 in. long.—*C. Backhousiana,* Hook. Journ. Bot. i. 253, and Ic. Pl. t. 2; Hook. f. Fl. Tasm. i. 61; *Mazeutoxeron reflexum,* Labill. Voy. ii. 66, t. 19; *C. reflexa,* Labill. Pl. Nov. Holl. ii. 120.—N. coast of Tasmania and islands of Bass's Straits.

c. leucoclada. Branches closely and often minutely tomentose. Leaves small, ovate or oblong, not cordate, coriaceous, flat, glabrous above, closely and often minutely tomentose underneath. Flowers generally under 1 in., and more campanulate than in the preceding varieties.—*C. leucoclada,* Lindl. in Mitch. Three Exped. ii. 39.—N. S. Wales (Mount Aiton, *A. Cunningham*) and Victoria.

d. glabra. Leaves ovate or oblong, small, flat, glabrous on both sides as well as the branches. Flowers of the var. *leucoclada* or rather longer.—*C. glabra,* Lindl. in Mitch. Three Exped. ii. 48; *C. Schlechtendahlii,* Behr, in Linnaea, xx. 630. –Victoria and S. Australia, and the single W. Australian specimen. *C. pulchella,* Sw. Fl. Austral. t. 1, belongs probably to this variety; the leaves were found to be sprinkled with stellate (fasciculate) hairs when young, glabrous with age.

The species, being highly ornamental, has long been cultivated in British gardens, and numerous garden varieties, hybrids and crosses, have been raised, amongst which the following have been figured as species:—*C. pulchella,* Mackay; Bot. Reg. t. 1224; Bot. Mag. t. 4029; Maund, Botanist, t. 152; *C. longiflora,* Paxt. Mag. Bot. vii. 195; *C. Harrisii,* Paxt. Mag. Bot. vii. 79; *C. bicolor,* Paxt. Mag. Bot. ix. 267.

4. **C. Lawrenciana,** *Hook. Journ. Bot.* i. 254. A shrub, usually tall and rather slender, sometimes growing into a small tree; branches more or less tomentose. Leaves petiolate, from ovate to oblong, obtuse, in some specimens ½ to 1 in., in others 1 to 2 in. long or even larger, flat, coriaceous, glabrous above, tomentose underneath. Flowers 1 to 3 together, axillary or terminal, shortly pedicellate and pendulous. Calyx tomentose, truncate with 4 small teeth. Petals tomentose outside, united the greater part of their length into a cylindrical corolla of ¾ to 1 in., the lobes usually shorter and more obtuse than in *C. speciosa.* Stamens exserted; filaments all filiform from the base or equally and very slightly dilated.—Hook. f. Fl. Tasm. i. 61; F. Muell. Pl. Vict. i. 138; *C. ferruginea,* Backh. in Ross, Hobart. Alm.; Hook. Comp. Bot. Mag. i. 276, and Ic. Pl. t. 3; Maund, Botanist, t. 124 (a large-leaved variety); *C. Latrobeana,* F. Muell. in Dietr. Fl. Univ. N. Ser. t. 11 (a still larger form).

Victoria. In subalpine situations, descending along rivulets and torrents to 1000 ft. elevation, *F. Mueller.*

Tasmania. Derwent river, *R. Brown*; abundant throughout the colony, *J. D. Hooker.*

In foliage this species can scarcely be distinguished from some forms of *C. speciosa,* var. *Backhousiana,* but it is always readily known by the filaments all similar and scarcely perceptibly dilated.

Var. *glabra.* Leaves narrow, oblong, lanceolate or almost linear, glabrous on both sides as well as the branches. Derwent river, *R. Brown,* and in some other Tasmanian collections.

5. **C. decumbens,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 30, *and Pl. Vict.* i. 137. A decumbent shrub with ascending branches, densely stellate-tomentose. Leaves oblong, from almost ovate to linear, obtuse, mostly 1 to 1½ in. long, coriaceous, nearly glabrous above, densely tomentose underneath. Flowers terminal, solitary, shortly pedicellate, usually pendulous. Calyx tomentose, with 4 lobes opposite the petals, triangular or lanceolate, rather longer than the tube, and 4 lobes alternating with them, subulate and nearly twice as long. Petals tomentose outside, united the greater part of their length into a nearly cylindrical corolla of ¾ to 1 in. Stamens exserted, the filaments all slightly dilated below the middle.

S. Australia. Lofty Range and Onkaparinga river, *F. Mueller;* Kangaroo Island, *Waterhouse.*

13. NEMATOLEPIS, Turcz.

(Symphyopetalum, *Drumm.*)

Calyx small, 5-cleft. Petals 5, valvate, united the greater part of their length in a cylindrical tube, spreading at the top. Disk small, crenate. Stamens 10; filaments slightly dilated at the base into an adnate scale fringed with long hairs; anthers not apiculate. Ovary of 5 distinct carpels, the styles inserted below the middle, and immediately united into one filiform style with a minute stigma; ovules 2 in each carpel, superposed. Cocci truncate, 2-valved, the endocarp cartilaginous and separating elastically.—A shrub, clothed with peltate scurfy scales. Leaves simple, alternate. Flowers axillary.

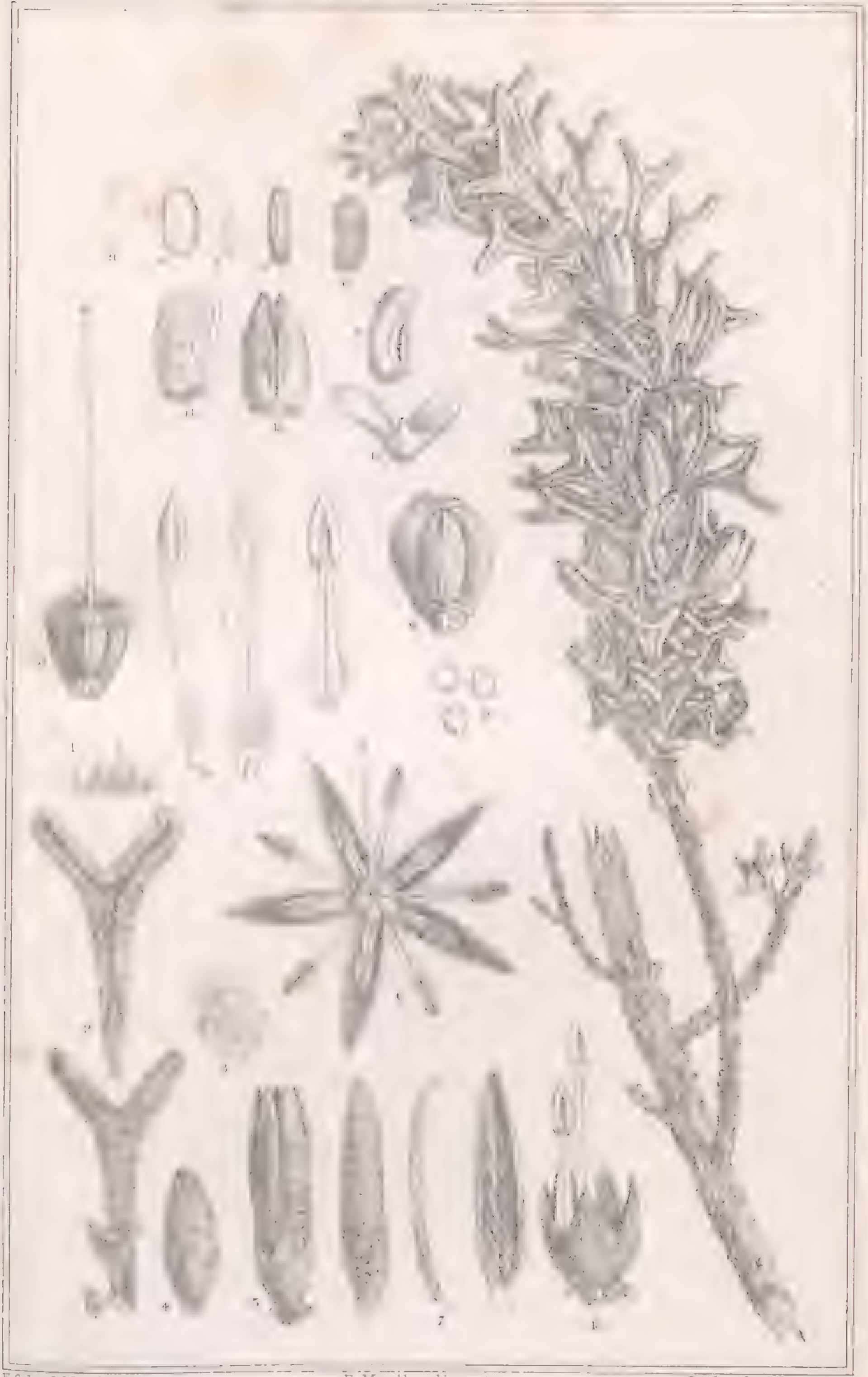
The genus consists of a single species, limited to W. Australia, allied to *Correa* in the united petals, to *Chorilæna* in the stamens, and to *Phebalium* in habit and indumentum.

1. **N. phebalioides,** *Turcz. in Bull. Mosc.* 1852, ii. 158. An erect, rigid, bushy shrub, the young branches, under side of the leaves, and pedicels covered with silvery scurfy scales. Leaves ovate or oblong, very obtuse, mostly under ½ in., but occasionally ¾ in. long, coriaceous, glabrous above, with more or less prominent tubercular glands. Pedicels short, axillary, recurved, 1-flowered. Sepals short, orbicular, almost cordate, smooth or sprinkled with a few scales. Corolla glabrous, ½ to ¾ in. long. The scale of the filaments forms a slight prominence inside, terminating the dilated base, and fringed with long hairs.—*Symphyopetalum correoides,* Drumm. in Hook. Kew Journ. vii. 54.

W. Australia. Near Middle Mount Barren, *Drummond;* Point Henry, *Oldfield.*

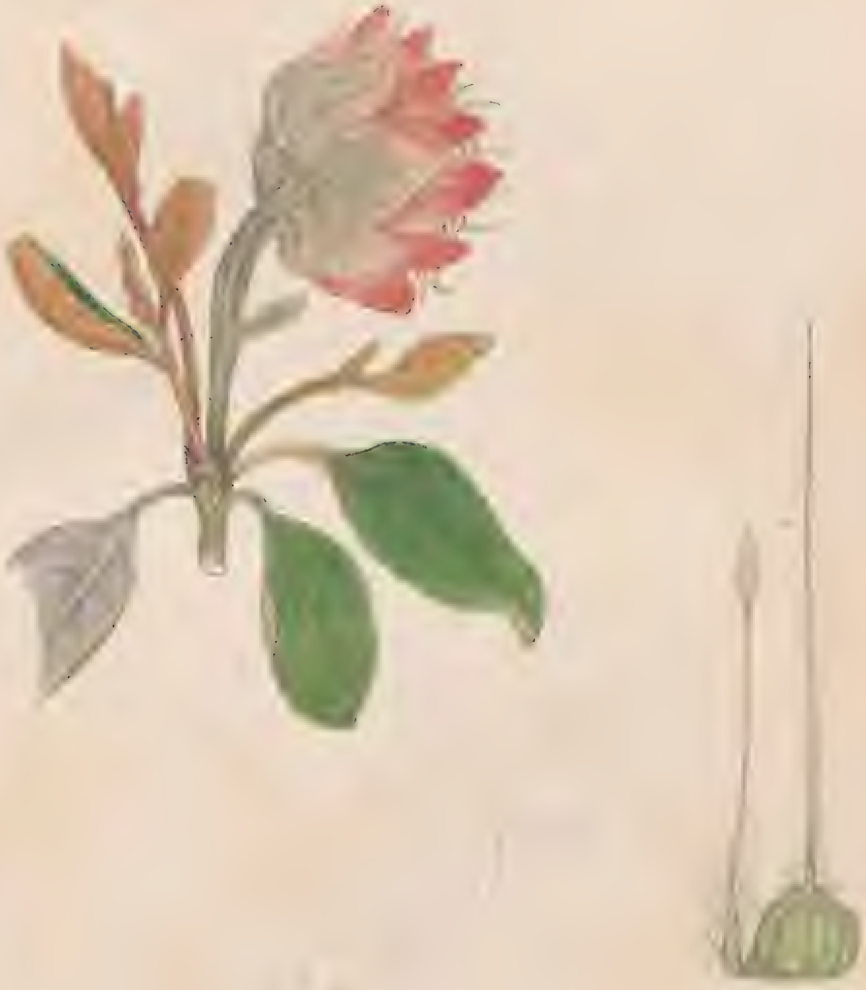
14. CHORILÆNA, Endl.

Flowers collected in dense pendulous cymes or heads, surrounded by a few subulate bracts. Sepals 5. Petals 5, very narrow, valvate or nearly so. Disk small, shortly lobed. Stamens 10, much exserted; filaments dilated at the base into an adnate scale, fringed with long hairs; anthers not apiculate. Ovary of 5 distinct carpels; styles inserted below the middle, and immediately united into 1 filiform style, with a small obscurely 5-lobed stigma; ovules in each carpel 2, superposed. Cocci truncate; endocarp cartilaginous, separating elastically.—Shrubs, with the habit of some *Thomasias,* hispid or



F Schonfeld del &lith F Mueller, direxit De Gruchy & Leigh, imp.

Nematolepis Euphemiae. F M.



Diplolaena Dampierii, D

tomentose with stellate hairs. Leaves alternate, sinuate-lobed. Flower-cymes pedunculate, axillary.

A genus limited to W. Australia, approaching *Diplolæna* in inflorescence, *Nematolepis* in the bearded appendage of the filaments, and connected with *Phebalium* through *P. Ralstoni.*

Leaves at length glabrous above, densely and softly tomentose underneath. Sepals lanceolate . . . . 1. *C. quercifolia.*
Leaves loosely stellate-hirsute. Sepals filiform . . . . 2. *C. hirsuta.*

1. **C. quercifolia,** *Endl. in Hueg. Enum.* 17. A tall shrub, the branches densely clothed with a soft close or velvety tomentum, often assuming a golden colour. Leaves petiolate, ovate, very obtuse, mostly 1½ to 3 in. long, sinuately lobed or broadly pinnatifid, somewhat coriaceous, the upper surface sprinkled when young with a slight stellate pubescence, glabrous when full grown, the under side densely and softly velvety-tomentose. Peduncles recurved, scarcely exceeding ½ in. Cymes often at least 1 in. diameter, of 7 to 14 flowers, the outer ones at the ends of the branches appearing pedicellate, the inner ones sessile. Bracts filiform, shorter than the calyx. Sepals lanceolate, tomentose outside. Petals rather longer, attaining 3 lines, tomentose outside. Stamens fully twice as long.—Bartl. in Pl. Preiss. i. 172.

W. Australia. King George's Sound, *Huegel, Fraser*; Bald Head and Island, *Preiss, n.* 2043, *Oldfield, Maxwell.*

2. **C. hirsuta,** *Benth.* A tall erect shrub, the branches densely hirsute with stellate hairs. Leaves petiolate, ovate, obtuse, mostly 2 to 3 in. long, sinuately lobed or broadly and obtusely pinnatifid, thinner than in *C. quercifolia*, the upper surface rough with scattered stellate hairs, the under side pale, more copiously hirsute. Peduncles solitary or 2 or 3 together, recurved, rarely above ½ in. long. Cymes nearly as in *C. quercifolia.* Bracts linear-filiform or slightly cuneate, very hirsute, the outer ones often 5 lines long, much more numerous than in *C. quercifolia*, and passing gradually into the sepals, of which the innermost are often under 3 lines. Petals very narrow, hirsute outwards along the centre. Stamens fully twice as long. Cocci short, glabrous or sprinkled with a few stellate hairs. Seeds smooth and shining.

W. Australia. Swan River, *Drummond*; Flinders Bay, *Collie*; Wilson's Inlet, *Oldfield.*

15. DIPLOLÆNA, R. Br.

Flowers sessile, in dense heads, surrounded by an involucre of broad bracts, imbricate in 3 or 4 series, the inner ones larger and petal-like. Calyx none. Petals 5, small, narrow. Disk small. Stamens 10, much exserted; filaments filiform, bearded with long hairs above the base; anthers not apiculate. Ovary 5-lobed; styles united into a single elongated style, with a shortly 5-lobed stigma; ovules 2 in each cell, superposed. Cocci 2-valved, the endocarp cartilaginous and separating elastically.—Shrubs, clothed with stellate tomentum. Leaves alternate, petiolate, entire. Flower-heads terminal, shortly pedunculate or nearly sessile.

The genus is limited to W. Australia, and, like *Chorilæna*, is chiefly distinguished by the inflorescence. In other respects it only differs from *Phebalium* in the abortion of the calyx and the narrow petals. The 4 following species will be found perhaps, when better known, to run too much into one another to be otherwise separated than as marked varieties.

Leaves tomentose or hoary on both sides.
  Flower-heads and leaves large. Outer bracts ovate, inner ones broadly elliptical . . . . 1. *D. grandiflora.*
  Flower-heads and leaves small. Bracts lanceolate . . . . . 2. *D. microcephala.*
Leaves green and glabrous above, tomentose underneath.
  Leaves oblong, flat. Bracts broad . . . . 3. *D. Dampieri.*
  Leaves linear, the margins revolute. Bracts narrow . . . . . 4. *D. angustifolia.*

1. **D. grandiflora,** *Desf. in Mem. Mus. Par.* iii. 451, *t.* 19. A shrub of 5 or 6 ft., with rigid divaricate branches, hoary or rusty with a close tomentum. Leaves ovate or broadly oblong, very obtuse, 1 to 2 in. long, hoary on both sides and especially underneath with a close tomentum. Flower-heads very shortly pedunculate, attaining sometimes 1½ in. diameter. Outer bracts 5, broadly ovate, herbaceous, tomentose, 4 or 5 lines long, united at the base. Inner ones about 10, longer, narrower, and more petal-like, those of the first 1 or 2 series broadly elliptical, obtuse, pubescent, passing into a few (innermost) much narrower ones, sometimes linear and acute. Petals linear, ciliate, quite concealed within the head. Stamens much longer than the bracts. Cocci 3 or 4 lines long, coriaceous, glabrous, smooth or transversely wrinkled.

W. Australia. Sharks Bay and Dirk Hartog's Island, *A. Cunningham, Milne.*

2. **D. microcephala,** *Bartl. in Pl. Preiss,* i. 173. A shrub of 2 or 3 ft. Leaves obovate or oblong, very obtuse, sometimes all under ½ in., and rarely exceeding 1 in., rather thick, hoary-tomentose above, and densely and softly tomentose underneath. Flower-heads much smaller than in *D. grandiflora* or *D. Dampieri.* Bracts lanceolate, the outer herbaceous ones not much shorter than the inner ones. Filaments more densely hirsute than in other species with reddish hairs.

W. Australia. Stony barren mountains of Grantham district, *Preiss, n.* 2018; near Cape Riche, *Preiss, n.* 2019, *Oldfield;* between Perth and King George's Sound, *Harvey;* Darling Range, *Collie;* Murchison river, *Oldfield.*

Var. *Drummondi.* Leaves oblong; ¾ to 1½ in. long; tomentum looser and sometimes disappearing with age on the upper side, which however has not the smooth texture of *D. Dampieri.*—Swan River, *Drummond, Coll:* 1843, *n.* 91; Phillips river, *Maxwell.* To this variety, rather than to the true *D. Dampieri,* ought perhaps to be referred the *D. Dampieri,* Lindl. Bot. Reg. 1841, t. 64, figured with narrow-lanceolate bracts.

3. **D. Dampieri,** *Desf. in Mem. Mus. Par.* iii. 452, *t.* 20. Nearly allied to *D. grandiflora,* and chiefly distinguished by the leaves, quite glabrous green and smooth on the upper side. In the form originally described, they are oblong or somewhat cuneate, the flower-heads are rather smaller than in *D. grandiflora,* and the bracts not so broad; but in the Murchison river specimens the leaves and bracts are nearly as broad as in that species.—Bot. Mag. t. 4059; Bartl. in Pl. Preiss. i. 173.

W. Australia. From Swan River, *Harvey, Oldfield.* and others, and Darling range, *Preiss, n.* 2042, to Champion Bay and Murchison river, *Oldfield.*

4. **D. angustifolia,** *Hook. Bot. Mag. under n.* 4059. Branches hoary or rusty with a close tomentum. Leaves linear or linear-cuneate, obtuse, ¾ to 2 in. long, the margins revolute, glabrous above, white with a close but

dense tomentum underneath. Flower-heads rather larger than in *D. microcephala* in Preiss's specimens, considerably larger in Drummond's, the bracts numerous and lanceolate, or the outer ones ovate-lanceolate.—*D. salicifolia*, Bartl. in Pl. Preiss. i. 173.

W. Australia, *Drummond, 1st Coll., Roe, Preiss, n.* 2020.

TRIBE II. ZANTHOXYLEÆ.—Trees or shrubs. Leaves pinnate or 3-foliolate with opposite leaflets or 1-foliolate (truly simple in *Geijera*), the leaflets usually large. Ovary lobed. Fruit separating into distinct 2-valved cocci. Endocarp persistent or separating elastically. Seeds in most genera albuminous; the cotyledons flattened and broader than the radicle, but in a few genera the albumen is wanting, and the cotyledons are thick and fleshy. -The tribe differs from *Boronieæ* more in habit than in any definite character.

16. BOSISTOA, F. Muell.

Flowers hermaphrodite? Calyx small, 5-toothed. Petals 5, valvate or slightly imbricate, with inflexed tips. Disk thick. Stamens 10. Ovary of 5 distinct carpels; styles almost terminal, united upwards, but soon separating; ovules 2 in each carpel, superposed. Cocci distinct, large, coriaceous, 2-valved; endocarp cartilaginous, separating. Seeds solitary; testa membranous; albumen none; cotyledons thick and fleshy, radicle small.—A tree. Leaves opposite, pinnate. Panicles terminal.

The genus is limited to a single Australian species, allied in some respects to *Melicope* and *Evodia*, but very different in habit as well as in the seeds, which have the structure of *Pilocarpus* and some other American genera.

1. **B. sapindiformis,** *F. Muell. Herb.* A tree with the habit of a *Cupania*, the young shoots, petioles and inflorescence minutely pubescent. Leaves pinnate; leaflets 7 to 11, opposite in pairs, the terminal odd one occasionally wanting, oblong-lanceolate, 4 to 8 in. long, more or less serrate-toothed, especially above the middle, narrowed at the base, on a short petiolule or nearly sessile. Panicles terminal, trichotomous, shorter than the leaves. Buds globular. Calyx small, very shortly and unequally toothed. Petals about 2 lines long. Filaments dilated at the base, attenuated upwards, glabrous; anthers large. Carpels very hirsute, on a raised disk. Styles short. Cocci broadly and very obliquely ovate, about 1 in. long, hard, almost woody, tomentose and rugose outside.—*Evodia pentacocca*, F. Muell. Fragm. iii. 41.

Queensland. Ipswich, *Nernst.* (A single leaf and loose fruit from F. Muell.)
N. S. Wales. Richmond and Clarence rivers, *Beckler.* (Specimens in flower only.)

17. MELICOPE, Forst.

Flowers more or less unisexual. Sepals 4. Petals 4, valvate, or slightly imbricate, with inflexed tips. Disk thick, entire or lobed. Stamens 8. Ovary of 4 nearly distinct carpels; styles inserted above the middle, united immediately or at the summit into one, with a capitate 4-lobed stigma; ovules 2 in each carpel, superposed or collateral. Cocci distinct, spreading, 2-valved; endocarp cartilaginous or horny, separating. Seeds usually solitary; testa crustaceous, shining; albumen fleshy, embryo straight or slightly curved, with oblong or ovate cotyledons.—Trees or shrubs. Leaves opposite, 3-foliolate, or (in species not Australian) 1-foliolate or simple. Flowers rather small, in terminal or axillary cymes or panicles.

Besides the Australian species, which are endemic, there are 2 from New Zealand and a few from the Pacific islands. F. Mueller proposes to unite *Melicope* with *Evodia*, but the double number of stamens is a more constant character than many others distinguishing the received genera of *Zanthoxyleæ*.

Petals thin. Styles lateral. Leaflets mostly under 4 in. Panicles terminal.
  Young branches pubescent. Petals and filaments glabrous. Ripe carpels erect . . . . 1. *M. neurococca.*
  Branches and leaves glabrous. Petals minutely pubescent. Filaments ciliate. Ripe carpels divaricate . . . . 2. *M. erythrococca.*
Petals and stamens rigid. Styles terminal. Leaflets more than 6 in. Panicles lateral . . . . 3. *M. australasica.*

The first 2 species are the nearest allied to the New Zealand *M. ternata*, Forst., the third is in some respects anomalous.

1. **M. neurococca,** *Benth.* A small tree, the young branches, petioles, and peduncles pubescent with simple spreading hairs. Leaves of each pair generally unequal, the larger one with a common petiole of 2 in. or more, the other with a much shorter petiole; leaflets 3, ovate-lanceolate or lanceolate, acuminate, mostly 3 to 4 in. long, glabrous above, sprinkled with a few hairs underneath. Panicles terminal, trichotomous, corymbose. Sepals small, orbicular, concave, ciliate. Petals about 2 lines long, glabrous, valvate or nearly so. Filaments glabrous, dilated to the middle. Ovary hirsute, the carpels almost distinct from the base. Styles inserted below the summit. Cocci distinct, nearly erect, broad, about 3 lines long, the valves coriaceous and transversely wrinkled.—*Evodia neurococca*, F. Muell. Fragm. i. 28, and ii. 103.

Queensland. Brisbane river, *W. Hill* and *F. Mueller;* Wide Bay and Archer's Creek, used by the natives to make their spades, *Leichhardt.*

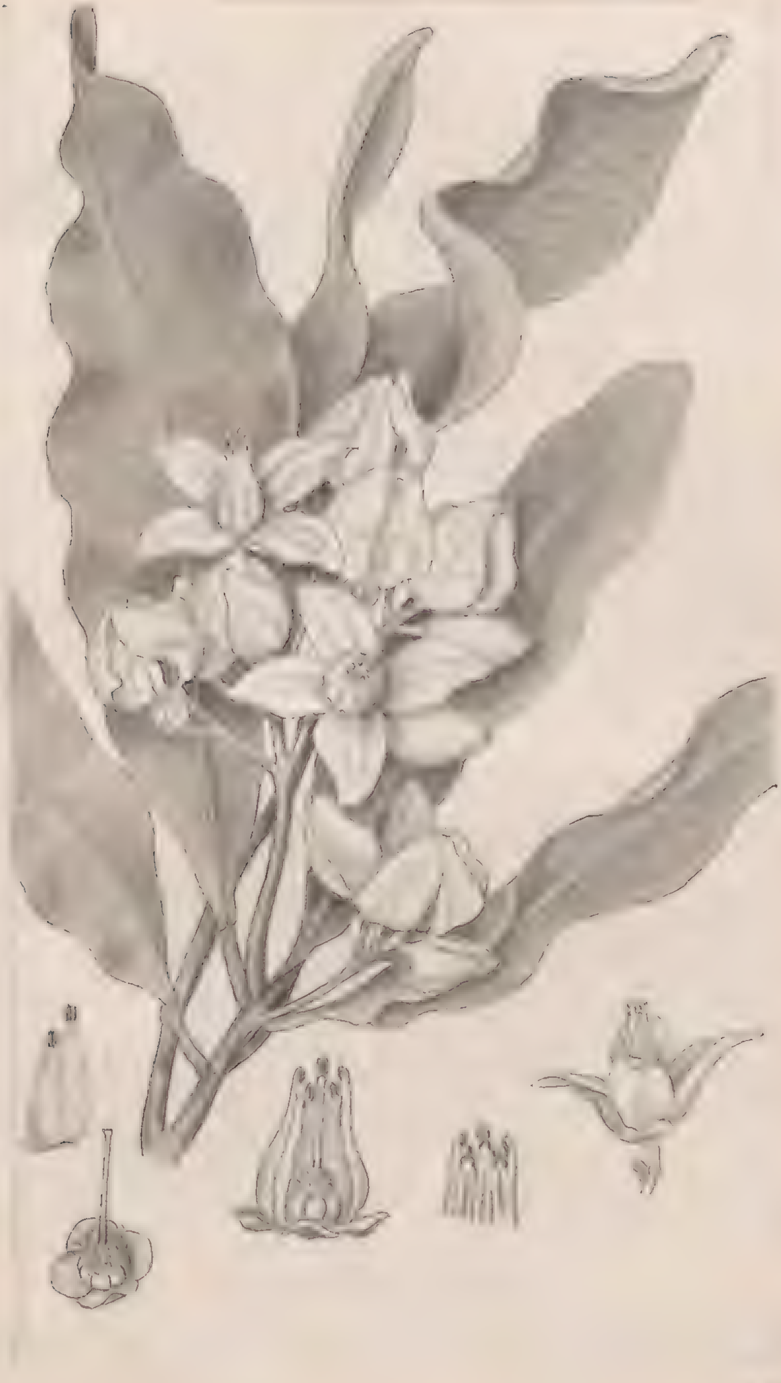
N. S. Wales. Richmond, Hastings, and Clarence rivers, *Beckler.*

2. **M. erythrococca,** *Benth.* A moderate-sized tree, quite glabrous. Leaflets 3 or rarely 1 only, oblong-lanceolate, obtuse, 1½ to 3 in. long, coriaceous, entire or obscurely crenulate, on a common petiole of ¾ to 1½ in. Panicles terminal or in the upper axils, loose, scarcely longer than the leaves. Sepals small, triangular, slightly ciliate. Petals 1½ lines long, slightly imbricate, valvate at the tips, minutely pubescent outside. Disk obscurely lobed. Filaments dilated and ciliate to above the middle. Ovary slightly hirsute, the carpels almost distinct. Styles inserted above the middle. Cocci 4 (or very rarely 5), very spreading, ovate, about 2 lines long, wrinkled, of a reddish colour.—*Evodia erythrococca*, F. Muell. Fragm. i. 28.

Queensland. Wide Bay, *C. Moore;* Moreton Bay and Brisbane river, *W. Hill, F. Mueller.*

N. S. Wales. Clarence river, *Beckler, C. Moore.*

3. **M. australasica,** *F. Muell. Herb.* A handsome tree, glabrous in all its parts. Leaves digitately 3-foliolate, the common petiole several times shorter than the leaflets; leaflets oblong-elliptical, or rarely obovate-oblong,



obtuse or shortly acuminate, 6 to 10 in. long, somewhat coriaceous, entire. Panicles axillary, trichotomous, loose and many-flowered, but much shorter than the leaves. Pedicels short. Sepals ovate. Petals narrow, about 4 lines long, of a firm consistence, reflexed above the middle, minutely pubescent outside; æstivation not seen. Filaments slightly dilated, ciliate and rigid, especially the larger ones, subulate upwards; anthers small. Disk inconspicuous. Carpels nearly glabrous, but tapering into strictly terminal short pubescent styles united at the summit. Cocci erect, distinct, angular; acuminate, not 2 lines long. Seeds shining.—*Evodia octandra*, F. Muell. Fragm. ii. 102.

N. S. Wales. Clarence river, *Beckler.*

18. EVODIA, Forst.

Flowers more or less unisexual. Sepals 4 or 5, imbricate. Petals 4 or 5, valvate or very slightly imbricate. Disk sinuate. Stamens 4 or 5; filaments subulate or slightly dilated. Ovary of 4 or 5 carpels, usually distinct and style-like in the male flowers, more or less united in the females, styles attached below the middle, more or less united with a 4- or 5-lobed stigma. Ovules 2 in each carpel, collateral or superposed. Fruit separating more or less completely into coriaceous 2-valved cocci, the endocarp separating elastically. Seeds with a crustaceous testa, usually smooth and shining; albumen fleshy; embryo straight with ovate cotyledons.—Unarmed trees or shrubs. Leaves opposite, usually digitately 3-foliolate or pinnate, rarely 1-foliolate or simple; leaflets entire, often large. Cymes or panicles axillary or rarely terminal. Flowers small.

A considerable genus, spread over tropical Asia and the islands of the Pacific and of the Madagascar group; the only Australian one is endemic. The genus differs from *Melicope* chiefly in the stamens equal to, not double, the number of petals, from *Zanthoxylum* by the leaves all or mostly opposite, generally by the more valvate petals and more united styles, besides minor characters offering occasional exceptions.

1. **E. micrococca,** *F. Muell. Fragm.* i. 144, *and* ii. 180. A tree often of considerable size, quite glabrous. Leaves digitately 3-foliolate with long petioles; leaflets obovate-oblong, obtuse, mostly 1½ to 3 in. long, entire, narrowed at the base, the central one almost petiolulate. Flowers in dense cymes or trichotomous panicles on short lateral peduncles below the young shoots. Sepals 4, orbicular, small. Petals 4, about 2 lines long, glabrous, slightly imbricate, with inflexed valvate tips. Filaments slightly dilated, ciliate, the attenuate tips folded inwards in the bud, exserted in the open flower. Cocci not 2 lines long, not separating so completely as in the *Melicopes*, rugose-glandular outside. Seeds black and shining.

Queensland. Moreton Bay, *W. Hill.*

N. S. Wales. Near Richmond, *R. Brown*; Blue Mountains, *Miss Atkinson*; northward to Clarence and Hastings rivers, *Beckler*; and Tenterfield, *C. Stuart*; southward to Illawara, *Ralston.*

19. MEDICOSMA, Hook. f.

Sepals 4, broad, imbricate. Petals 4, broad, much imbricate in the bud, the tips erect or recurved. Disk lobed. Stamens 8, filaments dilated, almost cohering by their woolly margins; anthers oblong. Ovary slightly 4-lobed, 4-celled. Style almost terminal, filiform, with a small 4-lobed stigma; ovules 2 in each cell, collateral. Fruit separating into distinct, 2-valved cocci; endocarp separating elastically. Seeds with a crustaceous shining testa, albumen fleshy; embryo straight with broad cotyledons.—A tree. Leaves mostly opposite, 1-foliolate. Flowers large, in axillary panicles.

The genus is limited to a single species endemic in Australia. F. Mueller proposes to include it as well as *Melicope* (with which it agrees in the double number of stamens) under *Evodia*, but the habit, that of *Acronychia*, and the large, much-imbricate petals, appear to be a sufficient distinction, unless nearly the whole of *Zanthoxyleæ* be united into one genus.

1. **M. Cunninghamii,** *Hook. f. in Benth. and Hook. Gen. Pl.* 297. A small tree, glabrous, or the young shoots and inflorescence minutely pubescent. Leaves mostly opposite, consisting of a single leaflet obscurely articulate on a short petiole, oblong-elliptical or rarely obovate-oblong, obtuse or acuminate, 3 to 6 in. long. Panicles axillary, 3-chotomous, with few large flowers. Sepals orbicular, 2 to 3 lines long, with a prominent midrib. Petals nearly ¾ in. long, broadly ovate, minutely tomentose outside, with a prominent midrib. Disk thick and glabrous. Ovary hirsute; style slender. Cocci about 3 lines long, quite distinct, scarcely coriaceous, hirsute. Seeds black.—*Acronychia Cunninghamii*, Hook. Bot. Mag. t. 3991; F. Muell. Fragm. i. 27; *Evodia Cunninghamii*, F. Muell. Fragm. iii. 2.

Queensland. Brisbane river, Moreton Bay, *A. Cunningham*, *F. Mueller*, and others.
N. S. Wales. Richmond and Clarence rivers, *Beckler.*

The subsucculent cocci, originally described in our 'Genera Plantarum,' are shown by subsequently received specimens to have been diseased.

20. ZANTHOXYLUM, Linn.

(Blackburnia, *Forst.*)

Flowers more or less unisexual. Calyx 3-, 4- or 5-lobed. Petals 3, 4 or 5, imbricate or rarely valvate or wanting. Disk small or obsolete. Stamens in the males 3, 4 or 5, the ovary rudimentary or conical, or of 3, 4 or 5 distinct style-like carpels. Female flowers without stamens or with scale-like staminodia. Ovary of 1 to 5 distinct carpels. Styles nearly terminal, distinct or united upwards; ovules 2 in each carpel, usually collateral. Fruit of 1 to 5 distinct cocci, dry or drupaceous, usually 2-valved; the endocarp separating or adherent. Seeds with a hard or crustaceous shining testa; albumen fleshy; embryo straight or curved, with broad flat cotyledons.—Shrubs or trees, often armed with scattered prickles, and sometimes climbing. Leaves alternate, usually pinnate. Flowers small, in axillary or terminal cymes or panicles.

A large genus, dispersed over the tropical and subtropical regions of the whole world. Of the following species, two are endemic in Australia, the third is also in Norfolk Island. All three belong to the section *Blackburnia*, characterized chiefly by solitary carpels, which are rare in the rest of the genus.

Stems and branches prickly. Panicles axillary. Flowers 2 to 3 lines long . . . . 1. *Z. brachyacanthum.*
Unarmed or with very few minute distant prickles.
  Leaflets very oblique, coriaceous. Panicles axillary and terminal. Flowers 2 to 3 lines long . . . . 2. *Z. Blackburnia.*

Leaflets scarcely oblique, not coriaceous. Panicles terminal.
Flowers very numerous, under 1½ line . . . . 3. *Z. parviflorum.*

1. **Z. brachyacanthum,** *F. Muell. Pl. Vict.* i. 108. A slender glabrous tree, the trunk and branches covered with short conical prickles. Leaves pinnate, the common petiole 6 to 10 in. long: leaflets usually 9 to 13, opposite in pairs, with or without a terminal odd one, petiolulate, from ovate to oblong-elliptical, shortly acuminate, 2 to 3 or rarely 4 in. long, equal or oblique at the base, coriaceous and shining. Panicles axillary, much shorter than the leaves, irregularly 2-3-chotomous. Flowers on very short pedicels, the males nearly 3 lines long, the females shorter. Sepals 4, small and broad. Petals obtuse, much imbricate. Ovary rudimentary in the male flowers; in the females consisting of a single carpel with a large oblique stigma, nearly sessile or on a very short style, terminal but excentrical. Fruit opening wide to the middle in 2 valves.

Queensland. Moreton Bay, Upper Brisbane river, etc., *A. Cunningham*, *F. Mueller*, and others; Araucaria ranges on the Burnett river, *F. Mueller*; Rockhampton, *Thozet*.
N. S. Wales. Clarence river, *Herb. Mueller*.

2. **Z. Blackburnia,** *Benth.* A shrub or small tree, glabrous and unarmed. Leaves pinnate, with a common petiole of 4 to 8 in. Leaflets 3 to 9, very obliquely ovate, shortly acuminate, usually 2 to 3 in. long, very unequal at the base and petiolulate. Panicles axillary or terminal, loose, but shorter than the leaves. Flowers rather smaller than in the last species. Petals imbricate in our specimens (induplicate-valvate, according to Endlicher). Ovary and fruit of *Z. brachyacanthum*.—*Blackburnia pinnata*, Forst.; Endl. Prod. Fl. Norf. 88.

N. S. Wales. Lord Howe's Island, *Milne*. The specimen being in leaf only, its identity with the Norfolk Island plant, from which the above character is taken, is not certain, but the foliage corresponds so well, that I am unwilling to omit it, in order to give the Lord Howe's Island flora as complete as possible.

3. **Z. parviflorum,** *Benth.* A small tree, glabrous and unarmed, or with very few minute distant prickles. Leaves pinnate, with a common petiole of 4 to 6 in., angular but not winged; leaflets usually 9 to 11, opposite in pairs, the terminal odd one occasionally wanting, ovate-lanceolate, acuminate, rarely above 2 in. long, entire or slightly denticulate, usually oblique, the upper edge most rounded at the base, membranous or at length scarcely coriaceous. Panicles terminal, 3-chotomous, broad, with numerous small 4-merous flowers. Sepals small, triangular. Petals scarcely 1½ lines long, slightly imbricate. Stamens in the males 4, about as long as the petals. Ovary rudimentary, of 1 or 2 carpels. Female flowers not seen. Cocci solitary, 3 to 4 lines long, coriaceous, rugose outside, opening broadly to below the middle in 2 valves, endocarp persistent. Seeds with a hard bony testa enveloped in a thin black shining epiderm.

N. Australia. Goulburn Island, *A. Cunningham*; Port Essington, *Armstrong*; islands of the Gulf of Carpentaria, *R. Brown*.

21. GEIJERA, Schott.

(Coatesia, *F. Muell.*)

Flowers hermaphrodite. Sepals 4 or 5. Petals 4 or 5, valvate or imbricate. Disk thick and fleshy. Stamens 4 or 5; filaments subulate. Ovary depressed, partly immersed in the disk, 4- or 5-lobed; styles terminal, immediately united into a single short style, with a capitate 4- or 5-lobed stigma. Fruit of 4 or 5 or sometimes fewer, distinct, 2-valved cocci, the endocarp adherent or partially separating. Seeds with a hard or crustaceous shining testa; albumen fleshy; embryo straight; cotyledons broad.—Trees or shrubs. Leaves alternate, simple, not articulate on the petiole. Flowers small, in terminal panicles. Sepals small.

The genus is limited to Australia, and differs from *Zanthoxylum* chiefly in the simple leaves and hermaphrodite flowers.

Panicles compact. Petals imbricate. Leaves broad . . . . 1. *G. Muelleri.*
Panicles loose. Petals valvate.
  Leaves from ovate to lanceolate . . . . 2. *G. salicifolia.*
  Leaves linear . . . . 3. *G. parviflora.*

1. **G. Muelleri,** *Benth.* A glabrous tree. Leaves ovate or obovate-oblong, 2 to 3 in. long, narrowed into a rather long petiole, coriaceous, with a prominent midrib, the lateral veins slender and rather distant. Panicle compact, scarcely equalling the last leaves. Flowers rather larger than in the other species. Petals nearly 1½ lines long, distinctly imbricate, obtuse, without inflexed tips. Cocci 2 to 3 lines long, distinctly but very shortly beaked, very spreading, but cohering at the base. Endocarp persistent.—*Coatesia paniculata,* F. Muell. Fragm. iii. 26.

Queensland. Cumberland islands, *R. Brown;* Araucaria woods near Moreton Bay, *F. Mueller;* Curtis Island, *Henne.* This species was generically distinguished by F. Mueller, on account of the imbricate æstivation of the petals, and a slight difference in the fruit, but the habit is that of the other species, and the genus is too closely allied to *Zanthoxylum,* which contains species with valvate as well as with imbricate æstivation, to admit of dividing it solely on that ground.

2. **G. salicifolia,** *Schott, Fragm. Rut. t.* 4. A moderately-sized tree, glabrous or with a minute hoary pubescence on the inflorescence, and sometimes on the under side of the leaves. Leaves from ovate to ovate-lanceolate or rarely oblong-lanceolate, obtuse or acuminate, mostly 3 to 4 in. long, entire, coriaceous, narrowed or rarely rounded at the base, with a rather long petiole. Panicles rather loose, broadly pyramidal, but much shorter than the last leaves, alternately branched, with numerous small white flowers. Petals about 1 line long, valvate. Cocci often reduced to 1 or 2, obovoid, not beaked, 2 to 3 lines long, the endocarp persistent or partially separating.—*G. latifolia,* Lindl. in Mitch. Trop. Austr. 236.

Queensland. Broad Sound, *R. Brown;* Moreton Bay and Brisbane river, *A. Cunningham, F. Mueller,* and others; Brigalow scrub on the Burdekin, and near Warwick, *F. Mueller;* Wide Bay, *C. Moore;* Port Denison, *Fitzalan;* Rockhampton, *Thozet;* Mantua Downs, *Mitchell.*

N. S. Wales. Clarence river, *C. Moore;* near Paramatta, *Woolls.*

Schott's figure represents a remarkably narrow-leaved form, which I have only seen in Brown's specimens, and in those from Warwick and from Rockhampton. These, however, pass into the common broad-leaved form.

3. **G. parviflora,** *Lindl. in Mitch. Trop. Austr.* 102. A tall shrub or small tree, with slender, erect or pendulous branches, glabrous or the inflorescence and young parts slightly hoary. Leaves linear, acute or obtuse,

3 to 6 in. long, and rarely above 3 lines broad, coriaceous, narrowed into a rather short petiole, the midrib prominent underneath. Flowers and fruit of *G. salicifolia*, or the flowers sometimes, but not always, rather smaller.—*G. pendula*, Lindl. in Mitch. Trop. Austr. 251. Possibly a variety only of *G. salicifolia.*

Queensland. Broad Sound, *R. Brown*; Burdekin river, *F. Mueller*; Belyando river, *Mitchell.*

N. S. Wales. Liverpool plains, *A. Cunningham*; Narran river, *Mitchell*; between the Darling and Lachlan rivers, *Victorian Expedition.*

Victoria. Murray desert, *F. Mueller.*

Var. (?) *crassifolia.* Leaves 1 to 2 in. long, very obtuse or retuse, thick, with the midrib scarcely conspicuous. Perhaps a distinct species.—*Eriostemon linearifolium*, DC. Prod. i. 720; *Zanthoxylum australasicum*, A. Juss. in Mem. Mus. Par. xii. 503.

S. Australia. Near Adelaide, *Herb. Hooker*; Spencer's Gulf, *F. Mueller*; South coast, *R. Brown*; isles of St. Francis, *Herb. Mus. Par.*

W. Australia. King George's Sound, *Maclean.*

22. PENTACERAS, Hook. f.

Sepals 5. Petals 5, valvate. Torus thick. Stamens 10; filaments subulate, glabrous. Ovary of 5 nearly distinct carpels, each with a glandular terminal appendage. Styles inserted below the middle, and immediately united into one filiform style, with a small stigma; ovules 2 in each carpel, superposed. Fruit-carpels 5 or fewer, often solitary by abortion, indehiscent, expanded all round into a membranous wing, forming obovate or oval-oblong samaræ, the centre almost drupaceous, with a cartilaginous endocarp. Seeds usually solitary; testa thick; albumen not copious; embryo straight, with ovate cotyledons.—Tree. Leaves alternate, pinnate. Flowers numerous, small, paniculate.

The genus is limited to a single species, endemic in Australia. It differs from *Evodia* in its habit, alternate leaves, and in some measure in the ovary resembling that of several *Diosmeæ*, and from that and all other *Zanthoxyleæ* by the fruit, which, at first sight, is like that of an *Ailanthus*; but the dotted leaves and superposed ovules, which place it among *Rutaceæ*, besides the inflorescence and other minor characters, amply distinguish *Pentaceras* from *Ailanthus.*

1. **P. australis,** *Hook. f. in Benth. and Hook. Gen. Pl.* 298. A glabrous tree, small according to A. Cunningham, attaining 60 ft. according to W. Hill. Leaves pinnate, with a common petiole of from 4 or 5 in. to nearly 1 ft.; leaflets usually 7 to 11, opposite in pairs, with a terminal odd one, ovate to lanceolate, obtuse or acuminate, 2 to 4 in. long, entire or obscurely crenate, the lateral ones more or less oblique and decurrent on the petiolule on the lower side, like those of a *Clausena*. Panicles large, terminal, spreading, loose, with numerous white flowers, pedicellate along the ultimate branches. Petals about 1½ lines long. Stamens nearly as long as the petals. Ovary glabrous. Ripe samaræ 1 to 1½ in. or rather more in length, ½ to ¾ in. broad.—*Cookia australis*, F. Muell. Fragm. i. 25, and iii. 27; *Ailanthus punctata*, F. Muell. Fragm. iii. 42.

Queensland. Brisbane river, *A. Cunningham*; Moreton Bay district, "White Cedar" of the colonists, *W. Hill, F. Mueller*; M'Connell's Brush, *Leichhardt.*

N. S. Wales. Richmond river, *C. Moore.*

TRIBE III. TODDALIEÆ.—Trees or shrubs. Leaves pinnate or 3-foliolate with opposite leaflets, or 1-foliolate, the leaflets usually large. Ovary not lobed. Fruit several-celled, indehiscent or rarely dehiscent. Seeds albuminous (in the Australian genus). The tribe has the habit of *Zanthoxyleæ*, with the ovary and nearly the fruit of *Aurantieæ*.

23. ACRONYCHIA, Forst.

(Cyminosma, *Gærtn.*)

Flowers polygamous. Calyx 4-lobed. Petals 4, valvate. Torus thick. Stamens 8; filaments subulate. Ovary 4-celled; style terminal; stigma entire or obscurely 4-lobed, ovules 2 in each cell, superposed. Fruit 4-celled, usually succulent, with a coriaceous or hard endocarp, opening loculicidally, or drupaceous and indehiscent. Seeds usually solitary in each cell, with a crustaceous black testa; albumen fleshy; embryo straight, cotyledons oblong. —Trees or shrubs. Leaves opposite or alternate, 1-foliolate. Flowers white or yellowish, in axillary or rarely terminal small panicles or loose cymes.

The genus extends over tropical Asia and the islands of the S. Pacific, to New Caledonia and New Zealand. Of the Australian species, one is also found in New Caledonia, the two others are endemic.

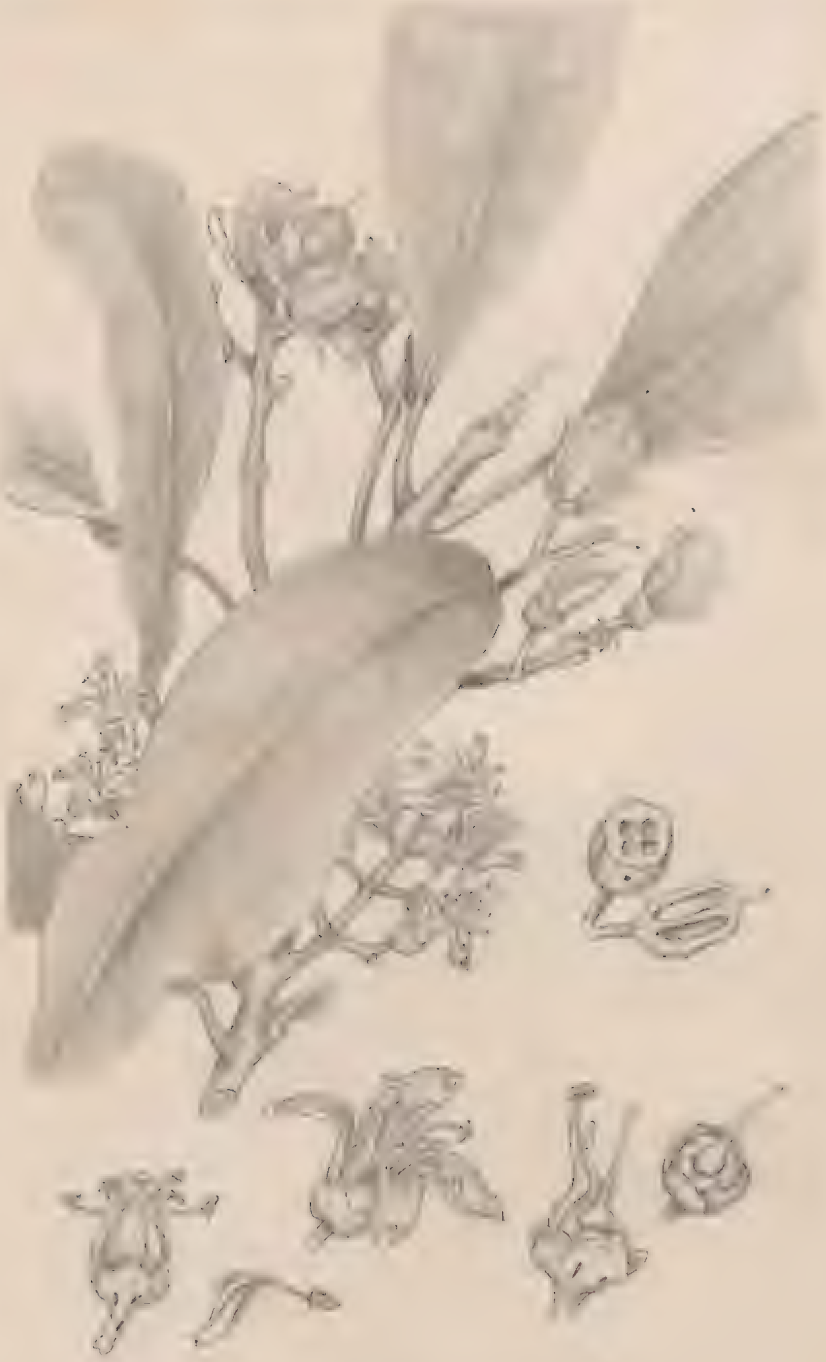
Flowers minutely tomentose, in short oblong panicles. Petals ovate . 1. *A. Baueri.*
Flowers glabrous, in axillary 3-chotomous cymes. Petals narrow.
  Leaves thin and scarcely coriaceous. Fruits 4-angled, depressed on the summit . . . . 2. *A. lævis.*
  Leaves very coriaceous. Fruits obovoid-globular . . . . 3. *A. imperforata.*

1. **A. Baueri,** *Schott, Fragm. Rut. t.* 3. A moderate-sized tree, glabrous or the young shoots and inflorescence minutely hoary-tomentose. Leaves opposite, of a single leaflet, on a rather long petiole, ovate, elliptical or obovate, obtuse or very shortly and obtusely acuminate, narrowed at the base, 3 to 4 or very rarely 5 in. long, thinly coriaceous. Panicles axillary, oblong, the side branches and pedicels very short, sometimes reduced to a small spike. Flowers small, not numerous. Sepals very broad, short, ciliate. Petals ovate, valvate with inflexed tips, minutely pubescent outside, 1 to $1\frac{1}{2}$ lines long. Filaments thin, dilated, and ciliate to above the middle. Ovary pubescent; style pubescent, short, with a rather large stigma. Fruit nearly globular or 4-angled, obtuse or shortly acuminate, $\frac{1}{2}$ in. diameter or rather smaller, not very succulent. Testa of the seeds hard and bony.—*A. Hillii*, F. Muell. Fragm. i. 26.

Queensland. Northumberland Islands and Richmond district, *R. Brown*; Moreton Bay and Brisbane river, *A. Cunningham*, *F. Mueller*, and others; Five Islands, *A. Cunningham.*

N. S. Wales. Macleay and Clarence river, *Beckler*; Port Stephens, *Harvey*; Illawara, *Herb. Mueller*; Ash Island, *Miss Scott.* Some specimens from Hastings river resemble rather more in foliage the Norfolk Island *A. Endlicheri*, Schott, but the flowers are diseased, and they cannot be determined.

2. **A. lævis,** *Forst. Char. Gen.* 53, *t.* 27. A tree, attaining 60 ft., glabrous except the stamens. Leaves irregularly opposite or alternate, of a single leaflet, obovate-oblong to oblong-elliptical, obtuse, $1\frac{1}{2}$ to 3 or rarely nearly 4 in. long, coriaceous when old. Cymes 2- or 3-chotomous, usually shortly



BIO-MEDICAL LIBRARY
MONASH UNIVERSITY

~~581·994~~
~~BEN~~

CALL No.

581 : 994
B 4766

Vol 1 COPY
PT 2

RARE BOOK

CALL NO.

Vol. Copy